



Neutral Citation Number: [2022] EWHC 2504 (TCC)

Case No: HT-2019-000450

IN THE HIGH COURT OF JUSTICE
BUSINESS AND PROPERTY COURTS OF ENGLAND AND WALES
TECHNOLOGY AND CONSTRUCTION COURT (QBD)

Rolls Building
Fetter Lane
London, EC4A 1NL

12/10/2022

Before :

MRS JUSTICE JOANNA SMITH DBE

Between :

ST JAMES'S ONCOLOGY SPC LTD

Claimant

- and -

**(1) LENDLEASE CONSTRUCTION (EUROPE)
LIMITED**

**(2) LENDLEASE CONSTRUCTION
HOLDINGS (EUROPE) LIMITED**

Defendants

**Jonathan Selby KC and Charlie Thompson (instructed by Macfarlanes LLP) for the
Claimant**

Alexander Hickey KC (instructed by Shoosmiths LLP) for the Defendants

Hearing dates: 6, 9, 10, 11, 12, 18, 19 May 2022

APPROVED JUDGMENT I direct that pursuant to CPR PD 39A para 6.1 no official shorthand note shall be taken of this Judgment and that copies of this version as handed down may be treated as authentic.

Covid-19 Protocol: This judgment has been handed down by the judge remotely by circulation to the parties' representatives by email and released to The National Archives. The date for hand-down is deemed to be 10 am on 12 October 2022.

Mrs Justice Joanna Smith:

1. These proceedings concern alleged fire safety and electrical engineering defects in the basement power plant of the Oncology Centre (“**the Oncology Centre**”) at St James’ University Hospital, Leeds (“**the Hospital**”).

FACTUAL BACKGROUND

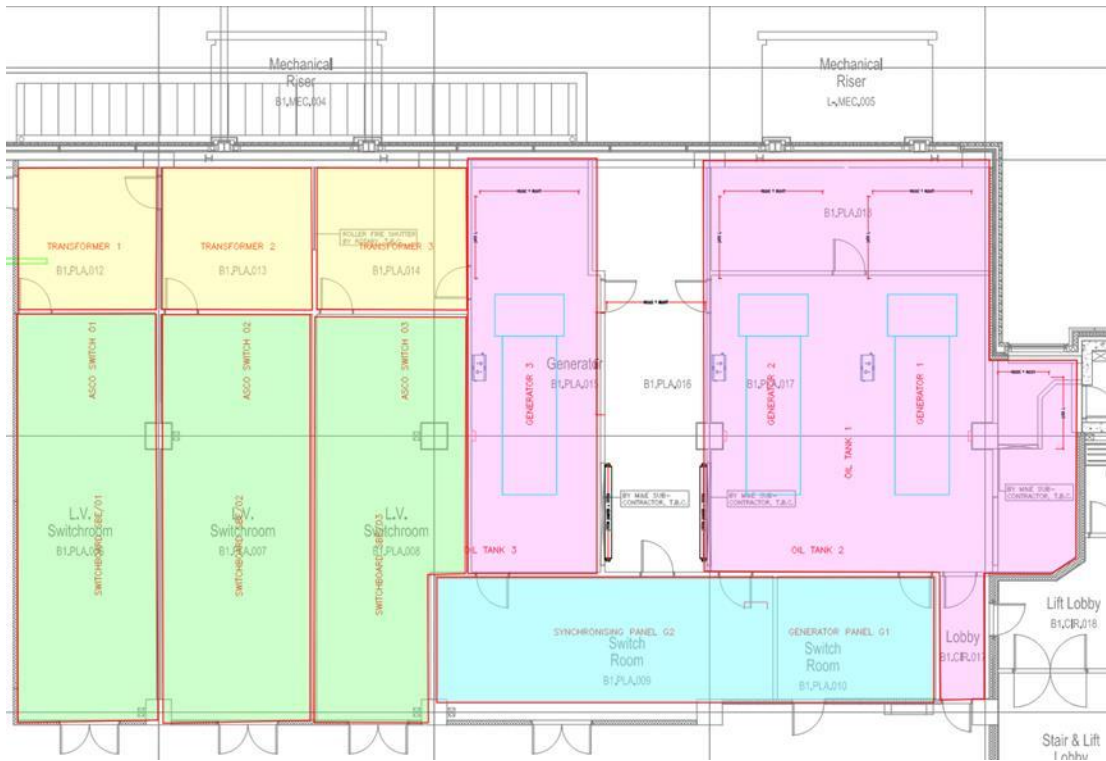
2. By a Deed dated 15 October 2004, St James’s Oncology SPC Limited (“**Project Co**”), entered into a Project Agreement with Leeds Teaching Hospitals NHS Trust (“**the Trust**”) under the Government’s Private Finance Initiative for the design, construction, operation and maintenance of the Oncology Centre as an extension to the Hospital (“**the PFI Project**”).
3. Also on 15 October 2004, Project Co:
 - (1) appointed Lendlease Construction (Europe) Limited (“**Lendlease**”) to design and build the Oncology Centre (“**the D&B Contract**”) for a Base Contract Sum of over £173 million. Lendlease Construction Holdings (Europe) Limited (“**Lendlease Europe**”), Lendlease’s parent company, provided a guarantee (the “**Parent Company Guarantee**”) to Project Co in relation to Lendlease’s work on the Oncology Centre. Throughout this judgment the Defendants will be referred to collectively as “**Lendlease**”, save where the context dictates otherwise.
 - (2) entered into a contract with Engie Buildings Ltd (“**Engie**”) to carry out estate maintenance renewal and replacement services at the Oncology Centre over the 30 year lifetime of the PFI Project (the “**EM Contract**”).
 - (3) entered into a tri-partite agreement with Lendlease and Engie (the “**Sub-Contractor Co-Operation Agreement**”) setting out their respective obligations and liabilities, including how claims and liabilities were to be resolved and/or re-allocated between them. In short, Project Co could require Engie to carry out remedial works and, if those remedial works related to defects caused by Lendlease, Engie was entitled to claim an indemnity for the cost of those works from Lendlease.
4. Also by a Deed dated 15 October 2004, Lendlease engaged Faber Maunsell, now known as AECOM Limited (“**AECOM**”) as its mechanical and electrical design and building services consultants to carry out services in connection with the PFI Project.

AECOM was the lead consultant responsible for designing the fire strategy for the Oncology Centre. Anshen Dyer were engaged to provide architectural services (“**the Architect**”).

5. Lendlease commenced its works under the D&B Contract in 2004 (“**the Works**”).
6. The Oncology Centre, which is located in the Bexley wing of the Hospital, is the largest oncology centre in the north of England. It contains 13 levels and has an approximate floor area of 67,300m² with 2400 rooms in total and beds for 350 in-patients spread across 14 wards. Its facilities include 4 operating theatres, an intensive care unit (“**ICU**”), a high dependency unit (“**HDU**”), bunkers for radiotherapy treatment, brachytherapy, chemotherapy, imaging and radiology departments, research facilities and pharmacies. Many of these facilities use medical equipment and machines which require an electricity supply.
7. Pursuant to the contractual arrangements referred to above, the Oncology Centre is now operated by Project Co and maintained by Engie. Albany SPC Ltd (“**Albany**”) provides Project Co with management services covering the operational side of running the Oncology Centre, including resolution of disputes with contractual counterparties.

Plant Room 2

8. Plant Room 2, located on basement level -1 (“**B1**”), is the central electrical and mechanical hub for the Oncology Centre. It contains many different items of building services equipment (plant) connected to building services distribution systems, such as pipes, cables and ventilation ducts. Within Plant Room 2 there are a number of electrical plant rooms which provide the electricity supply for all of the medical equipment and facilities in the Oncology Centre. The drawing below identifies specifically those electrical plant rooms (referred to as “**the Electrical Substation**”) in the coloured sections.



9. The Electrical Substation comprises three High Voltage (HV)/Low Voltage (LV) transformer (TX) rooms (marked in yellow and labelled 1 to 3), three Low Voltage (LV) Switchrooms (marked in green and labelled 1 to 3), two generator rooms containing three generators (two in one room and one in the other) with their associated day-fuel tanks (marked in pink with the generators labelled 1 to 3) and two generator LV Switchrooms (marked in blue and labelled 1 and 2). Two mechanical risers are located on the external wall of the Electrical Substation.

10. The normal running of the Electrical Substation can be summarised as follows:

- (1) Electricity enters the building in the yellow section of the drawing from the external network at 11,000 volts (a HV supply) via two incoming HV cables which are connected to ring main units (“**RMUs**”) feeding the three transformers which are contained in white transformer cabinets.
- (2) The three transformers reduce the 11,000 volts to 400 volts (a LV supply) so that it can be distributed throughout the Oncology Centre. This is the “primary” power supply. Each transformer is designed to accommodate approximately 50% of the Oncology Centre’s required load such that if one

transformer fails, the adjacent transformer will be able to ramp up to take on the failed transformer's load (via an automatic switch in the Switchboard).

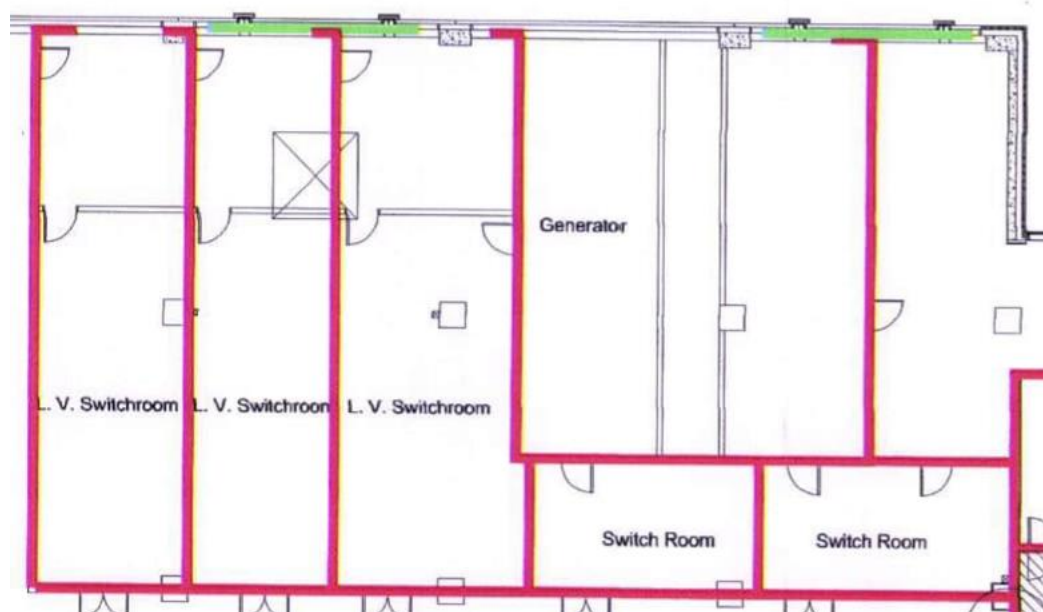
- (3) The three generators in the pink section of the drawing are not connected to the external electrical network, but are designed as a back-up (or "secondary" power supply) in the event that the electrical supply from the transformers is lost. They are designed so that two generators have the capacity to provide 100% of the electrical load required to power the Oncology Centre. The generators are diesel powered and sit next to the fuel tanks that supply them. Electricity from the generators is fed into the generator switchpanels (located in the blue section of the drawing), which in turn distribute the power to the LV Switchboards.
- (4) The distribution of LV electricity around the Oncology Centre (whether from the transformers or the generators) occurs via the LV Switchboards located in the green section of the drawing. The cables from the LV Switchgear are routed on a cable management system at high level on ladder racks and cable trays.

Design Specifications

11. Schedule 8 of the Project Agreement set out the Trust's construction requirements for the Oncology Centre, including the "minimum technical and construction design standards". I return to the detailed contractual provisions and design specifications in more detail in a moment, but of particular importance in the context of this case are:

- (1) Health Technical Memorandum ("**HTM**") 81 which provides guidance on the design of fire precautions in new hospitals and major extensions to existing hospitals;
- (2) HTM 2007 which focuses on the design and operation requirements of electrical services supply and distribution in all types of healthcare premises;
- (3) HTM 2011 which deals specifically with emergency and essential electrical supply equipment in all types of health care and personal social services premises; and
- (4) BS 7671:2001 'Requirements for Electrical Installations', 'IEE Wiring Regulations Sixteenth Edition' ("**BS 7671**"), concerning requirements for electrical installations generally.

12. The Project Agreement expressly provided that Project Co's design should comply with the principles outlined in HTM 81 and, in instances of non-compliance, those aspects of the design should adopt a justified fire-engineering approach and be to a standard equal to, or better than, HTM 81.
13. The key document setting out the Oncology Centre's fire-safety design is the Fire Safety Strategy prepared by AECOM. Fire strategy documents are used by designers as a means of explaining and justifying their fire safety design decisions to the end-user of the building.
14. Revision 12 of the Fire Strategy (the "**Rev 12 Fire Strategy**") was expressly incorporated into the Project Agreement pursuant to Volume 7(6) of Part 4 of Schedule 8. It provided for 60 minutes' fire compartmentation around the Electricity Substation and rooms within it, separating in particular each of the HV/LV Switchrooms, one of the generators from the other two and the generator control panels. This planned compartmentation is shown in the drawing below (red lines identifying 60 minute compartments and green lines identifying 120 minute enclosures with 60 minute doors):



15. Revision 19 of the Fire Strategy (the "**Rev 19 Fire Strategy**") is dated 19th November 2007, shortly before practical completion of the Oncology Centre. Importantly, by way of track change amendments to the text of the Rev 19 Fire Strategy, the need for compartmentation around the generators was removed. Furthermore the attached Architect's drawing (Low-A-4200-B1-501 Rev E04 dated

20 November 2007) made clear that the whole of Plant Room 2 (of which the Electricity Substation formed only a part) was now a single fire compartment comprising an area of 1927m². The Electricity Substation was no longer protected by fire compartmentation from the rest of Plant Room 2 and the individual rooms within the Electricity Substation were no longer separated from each other with fire compartmentation.

16. As built, Plant Room 2 includes two different types of dividing partition walls. Those between rooms LV1, LV2 and LV3 and rooms TX1, TX2 and TX3 are formed as conventional plasterboard stud walls. These walls are formed to full height but mechanical and electrical services pass through the walls at a high level. The services pass through formed 'letterbox' openings in the partition walls which are larger than the services passing through. The openings are not sealed in any manner. The partition walls dividing rooms TX1, TX2, and TX3 from LV1, LV2 and LV3 and dividing LV3 from the generator rooms and dividing the generator rooms from the larger area of Plant Room 2 are fire rated lightweight partition walls. These walls are also formed to full height but again include openings at a high level for services to pass through. Again these openings are not sealed in any manner.

The identification of the Defects

17. Practical Completion was certified on 14 December 2007.
18. Between 2010 and 2014 annual PFI Statements of Fire Safety Compliance were signed by PJ Clark of Albany. Notwithstanding the apparently clean bill of health provided by these statements, deficiencies relating to fire stopping were identified in the Oncology Centre in 2014 following risk assessments and other works. These deficiencies were raised with the Trust and Project Co as an issue that needed investigation.
19. Accordingly, Project Co engaged Hughes & Associates to report on the fire safety of the Oncology Centre. Hughes & Associates produced a "Fire Compartment Survey Report" in September 2014 based on a sample area of the Oncology Centre, identifying around 250 defects. Further to that report, additional defects were identified and remedial works were commenced. The remedial works, which were carried out by Lendlease between 2015 and 2017, did not concern any of the defects about which complaint is made in these proceedings.

20. During the course of the remedial works, concerns were raised about the fire compartmentation within Plant Room 2. On 18 February 2015 Lendlease completed a “Reported Defect Initial Checklist” in respect of the Plant Room 2 walls.
21. On 17 October 2017 Marcus Picken, of Albany, wrote to Alan Avey (“**Mr Avey**”), a Commercial Director of Lendlease, noting that a concern had been raised about the lack of sub-compartmentation between the switch rooms and generator rooms in Plant Room 2. Mr Avey responded on 23 November 2017 stating that the issue had been reviewed in 2015 and that Plant Room 2 had been built in accordance with the Rev 19 Fire Strategy.
22. On 31 May 2018 an email from Les Bekesi (“**Mr Bekesi**”) of Lendlease to Mr Avey recognised that no sprinkler system had been installed in Plant Room 2.
23. A further report (“Fire Door and Compartment Line Survey”) was provided by Hughes & Associates on 31 July 2018 (“**the 2018 Hughes Report**”), dealing with Plant Room 2. The 2018 Hughes Report concluded that remedial works were necessary based on the inadequacies of the Rev 19 Fire Strategy:

“The changes to the original approved Autumn fire strategy have resulted in current arrangements not adequately controlling the risk of the spread of fire. The plantroom, fuel stores, oxygen stores and HV equipment are all within one compartment under a tall building with openly ventilated walls to the exterior. The risk of fire spread horizontally and vertically is higher than would normally be acceptable in a fire risk assessment. The risk of losing power supplies, both primary and secondary, in a fire emergency is also too great to allow through risk assessment.”

24. In circumstances where Hughes & Associates took the view that the existing ‘as built’ situation “has not been fire engineered, nor could a fire engineering argument be made for the current situation”, the 2018 Hughes Report recommended that the originally planned fire compartmentation should be constructed in Plant Room 2.
25. The 2018 Hughes Report was sent to the Trust under cover of a letter from Mr James Lassiter (“**Mr Lassiter**”) on behalf of Project Co dated 7 August 2018 stating that, as the Trust was aware, Project Co had become concerned regarding fire safety within Plant Room 2 on level B1 at the Hospital and that, in the circumstances, a report had been commissioned. The letter referred to the fact that the 2018 Hughes Report had also been sent to Lendlease and it confirmed that the Trust would be kept apprised of developments.

26. Project Co subsequently obtained a report from consulting engineers, Hoare Lea LLP (“**Hoare Lea**”), entitled “Evaluation of main substation installation fire compartment and electrical system review Revision 0” on 23 October 2018 (“**the Hoare Lea Report**”). Hoare Lea was asked to review the existing installation and issues identified by Hughes & Associates, with particular attention given to the lack of separation between the primary and secondary sources of electrical power. The Hoare Lea Report identified its scope as follows:

“Concerns about the integrity of the electrical supply were initially identified by SJO during the testing of the standby generators when it was observed that there was an apparent lack of fire stopping and separation. As an initial response to the concerns Hughes Associates were commissioned to provide a fire engineering report for the plantroom 2 area which concludes that the current arrangements do not adequately control the risk of spread of fire. This report provides additional information, in particular, with respect to the electrical installation in relation to the concerns raised by Hughes Associates.”

27. Following the Hoare Lea Report, Hoare Lea was tasked with devising and refining a suitable remedial scheme. At the same time, Project Co commissioned Quadriga Health and Safety Ltd (“**Quadriga**”) to advise on the health and safety implications resulting from the defects identified. Quadriga’s initial report was provided on 21 July 2020.
28. Hoare Lea produced an outline remedial scheme design on 23 November 2021 (“**the Proposed Remedial Works**”).

The Proceedings against Lendlease

29. On 11 December 2019 these proceedings were commenced against Lendlease. Particulars of Claim were served, following an extension, on 29 June 2020 (since amended on 16 February 2022).
30. In summary, Project Co contends that the construction of the Oncology Centre is defective in that it was built in breach of fire safety standards and contractual requirements. The defects on which Project Co relies are set out in a Scott Schedule to the Particulars of Claim which, as at the date of trial, identified 9 main defects with a total quantum of £6,242,274.47.
31. These defects broadly concern fire safety and electrical engineering defects in Plant Room 2 and (with the exception of defect 2 which was abandoned by Project Co in opening) may be briefly described as follows (“**the Defects**”):

- (1) **Defect 1** – Plant Room 2 is a single fire compartment containing the Electricity Substation. There is no fire separation between any of the equipment/plant within Plant Room 2, where services pass through intermediate walls, the fire stopping is defective and the power supply cabling is not separately/diversely routed so as to reduce the risk of fire affecting both the primary and secondary power supplies;
 - i. **Defect 1A** – The installation of the transformers and generators is defective, in that they are not individually enclosed within 120 minute fire resistant construction so as to prevent fire spreading to other equipment. Further, as a consequence of Defect 1, there is inadequate protection to power supplies to the fire-fighting lift;
 - ii. **Defect 1B** – As a consequence of Defect 1, there is inadequate protection to the power supply for smoke extract fans within Plant Room 2;
 - iii. **Defect 1C** – as a consequence of Defect 1, there is no fire separation between the individual generators within the generator room, the generator room and adjacent LV switch rooms, and the remainder of Plant Room 2;
- (2) **Defect 3** – there is inadequate fire-stopping construction between the main electrical switchgear and “normal dependency” patient access areas. Further, Plant Room 2 does not have its own fire suppression system;
- (3) **Defect 4** – the service risers from Plant Room 2 do not constitute 120 minute fire-protected shafts and ductwork has been routed through the transformer rooms and into the service risers without any fire protection;
- (4) **Defect 5** – the route for the removal and renewal of the transformers and RMUs from Plant Room 2 is impractical and inadequate;
- (5) **Defect 6** - the route for the removal of the individual generators from Plant Room 2 is impractical and inadequate;
- (6) **Defect 7** - the ductwork in the rooms within the Electricity Substation leading from the air handling units through to risers up the building is not adequately fire-stopped;
- (7) **Defect 8** - the main outgoing cable installations from the LV switch rooms are routed through the generator room and/or into the remainder of Plant Room 2 without any fire stopping/barriers; and

- (8) **Defect 9** - there is no differentiation or separation between essential and non-essential cables throughout the Oncology Centre.
32. In its Amended Defence and at trial, Lendlease focused almost exclusively on the content of the Rev 19 Fire Strategy to contend that the final design of the Oncology Centre is not defective. It argued that, to the extent that any aspects of the design are not compliant with the requisite technical specifications as set out in the Project Agreement and D&B Contract, these were derogations which were identified, justified, and ultimately approved by all the relevant parties. I shall refer to this as the “**Fire Strategy Defence**”.
33. Shortly before the trial, Lendlease acknowledged that there had been a failure to install a fire suppression system in Plant Room 2 (Defect 3) and that works were required to replace 3 cables in the smoke extract system (Defect 1B). The remedial works accepted as necessary by Lendlease, which involve the installation of a water mist suppression system and replacement of these 3 cables (together with appropriate add-ons), are valued by it at £489,210.

Remedial Works

34. The Proposed Remedial Works are to be implemented in two stages:
- (1) Stage 1 (“**the Stage 1 Works**”) comprises works to mitigate the alleged risk created by the lack of fire protection for the generators, the absence of fire separation between the generators and other areas of Plant Room 2 and the presence of the large volume of fuel stored within the generator rooms. This will be achieved by the installation of an external tank (“**the Fuel Dump Tank**”) that provides 60 minutes of fire resistance, dump lines from the existing fuel tanks within the generator rooms that permit fuel to be excavated into the external tank in the event of fire and the installation of a temporary external generator, supplying power via a fire proof cable installation that is segregated from other circuits. The temporary generator will not be retained once the Stage 2 permanent works have been carried out.
- (2) Stage 2 (“**the Stage 2 Works**”) involves a permanent remedial scheme designed to rectify each of the Defects.
35. Macfarlanes LLP, solicitors to Project Co, wrote to Shoosmiths LLP, solicitors for Lendlease, on 21 January 2022 providing disclosure in relation to the Stage 1 Works

and making clear that further documents in respect of the procurement of such works would be disclosed as and when available.

36. As at the date of trial no remedial works had been undertaken. Engie has been contracted to commence work on the installation of the Fuel Dump Tank on 30 May 2022 and I understand that the Fuel Dump Tank is to be delivered to the Oncology Centre on or around 30 June 2022 and craned into place.
37. For the first time in the Amended Defence served on 17 March 2022, Lendlease alleged that Project Co did not intend to implement any remedial works, a point that it pursued in opening, together with a further suggestion that there was also no evidence of the Trust's intentions and/or approval in relation to the Proposed Remedial Works. I shall need to consider these allegations in more detail later in this judgment.

THE ISSUES

38. The parties agreed a list of issues at the PTR, which was expressly said to focus only on the main issues. The outstanding issues for determination following the trial (as identified in the agreed list of issues) are as follows:

Fire Strategy:

- (1) Was the Fire Strategy discussed and/or reviewed and/or agreed and/or approved by the Trust and/or Project Co and/or Building Control?
- (2) If so, to what extent and in what respects?
- (3) Did the Fire Strategy adopt a fire engineering approach within the meaning of paragraph 11.3 of Part 3, Sub-Part D of Schedule 8 to the Project Agreement?
- (4) Did the Fire Strategy provide a standard of fire safety equal to or better than that provided for in HTM 81?
- (5) Did Lendlease carry out and complete the Works under the terms of the D&B Contract in accordance with the Fire Strategy?
- (6) If the works were completed in accordance with the Fire Strategy, can it be said that nonetheless Lendlease was in breach of contract to Project Co and, if so, on what basis?

Defects 1, 1A, 1B, 1C, 3, 4, 5, 6, 7, 8 and 9:

- (7) Do the Defects constitute breaches of contract by Lendlease?
- (8) If so, what (if any) of the remedial works as pleaded by Project Co are necessary, practical and proportionate to rectify such alleged Defects?
- (9) Have any remedial works been carried out?
- (10) Does Project Co intend to carry out any remedial works and, if not, what is the relevance of any absence of intention?
- (11) What quantum is Project Co entitled to recover from Lendlease and/or Lendlease Europe in respect of each of those alleged Defects?

39. Attached to its closing submissions, Lendlease provided a further proposed list of issues (not agreed by Project Co) which contained various new issues that Lendlease considers to be appropriate questions for consideration. In his oral closing submissions, Mr Hickey KC, on behalf of Lendlease, clarified that the new issues “identify some of the things that will need to be considered”. Whilst Lendlease may be right that the main issues identified above encompass various sub-issues and questions which I shall need to determine in this judgment, I see no need to over-complicate matters by expanding the agreed list of main issues. Accordingly, with one exception, I shall address the agreed issues in turn, picking up, where appropriate and necessary, any additional issues or arguments raised by the parties in their submissions. The exception is issue (9) above (“Have any remedial works been carried out?”). It is common ground that as at the date of trial no remedial works have been carried out and Mr Hickey struck this issue through in his proposed list of issues. Accordingly there is no further need for me to address the point.

THE EVIDENCE

Disclosure

40. During the course of the trial, Lendlease suggested on various occasions (both in submissions and during cross examination) that Project Co had failed to disclose relevant documents including, in particular, documents evidencing the Trust’s intentions in relation to the conduct of the remedial works. This had not been an issue prior to trial, no issue had been pleaded as to the Trust’s intentions and no issue identified for disclosure in the agreed Disclosure Review Document. Indeed there had never been any complaint in respect of Project Co’s disclosure until exchange of written Opening Submissions.
41. In an attempt to meet this criticism (about which it chose not to complain), Project Co disclosed a few additional documents, whilst at the same time providing the court with a comprehensive explanation in respect of disclosure in a letter from Macfarlanes LLP to the court dated 9 May 2022. In light of the content of this letter, I am satisfied that Project Co has satisfactorily complied with its disclosure obligations and that there are no proper grounds for criticism by Lendlease.
42. During the trial two applications were made by Project Co for the admission of previously undisclosed evidence.

43. The first application related to (i) the admission of the second witness statement of Mrs Eleanor Reiblein-Berridge (“**Mrs Berridge**”), a General Manager within Albany, to deal with the new allegation in the Amended Defence to the effect that Project Co had no intention of carrying out the Proposed Remedial Works; and (ii) the admission of a supplemental quantum report dealing with the cost of installing Lendlease’s proposed water mist suppression system (also pleaded for the first time in the Amended Defence). In circumstances where Lendlease did not ultimately object to this application, I granted it on the first day of the trial.
44. The second application related to a note of a meeting between (amongst others) Project Co and the Trust held on 6 April 2022, detailing the plan for the Proposed Remedial Works, together with the steps required to procure and deliver those works. The possibility that minutes from working group meetings between Project Co and the Trust might exist came to light during Mrs Berridge’s cross-examination and Project Co immediately carried out a search for the same, providing this document under cover of a letter dated 10 May 2022. Again, Lendlease did not object to the admission of this document and I accordingly permitted Project Co to rely on it. In light of the content of the letter from Macfarlanes LLP dated 9 May 2022 to which I have already referred, I do not regard the late disclosure of this document as evidence of a failure on the part of Project Co to comply with its obligations. On the contrary, Project Co appears to me to have acted properly throughout the trial to ensure full compliance with its disclosure obligations.

The witness evidence

Approach to the Evidence

45. In closing, Lendlease invited me to draw adverse inferences from the absence of factual witnesses that could potentially have been called by Project Co.
46. It is common ground that it is open to the court to draw adverse inferences from the absence of a witness who might be expected to have material evidence to give on an issue, but who is not called by a party who might reasonably have been expected to call that witness, without any adequate reason being given for his or her absence. However, before the court can draw such an inference there must be a case to answer on the issue (see *Wisniewski v Central Manchester Health Authority* [1998] PIQR 324, per Brooke LJ at page 340).

47. The Court of Appeal recently considered the authorities on inferences (including *Wisniewski*) in *Mackenzie v Alcoa Manufacturing (Gb) Ltd* [2019] EWCA Civ 2110 per Dingemans LJ at [43]-[50]. At [50] Dingemans LJ said:

“It seems therefore that it is possible to state the following propositions. First whether it is appropriate to draw an inference, and if it is appropriate to draw an inference the nature and extent of the inference, will depend on the facts of the particular case, see *Shawe-Lincoln* at paragraphs 81-82. Secondly silence or a failure to adduce relevant documents may convert evidence on the other side into proof, but that may depend on the explanation given for the absence of the witness or document, see *Herrington* at page 970G, *Keefe* at paragraph 19 and *Petrodel* at paragraph 44”.

48. I shall return to the specific inferences I am invited to draw in a moment. For present purposes, I note, however, that Project Co rejects the suggestion that the court should draw any inferences. Instead, it invites the court to determine this case on the available evidence.

Factual Witnesses

49. The parties called only one factual witness each. Neither witness had been involved in the Works and the relevance of their evidence was accordingly somewhat limited.

Mrs Berridge

50. Project Co called Mrs Berridge who had signed two witness statements, the first dealing primarily with her role at the Oncology Centre, the approach of the Trust to the Proposed Remedial Works and the substance of a meeting held on 10 December 2019 (“**the December Meeting**”) which she attended; the second dealing with the allegation raised by Lendlease in its Amended Defence that Project Co has no intention of carrying out the Proposed Remedial Works.
51. Mrs Berridge is a General Manager with Albany and, since April 2019, has acted as Project Co’s representative in its dealings with the Trust, Engie and Lendlease, together with any other contractors, sub-contractors and suppliers engaged by Project Co or otherwise undertaking work or providing services in relation to the Oncology Centre. Mrs Berridge’s role was formerly held by Mr Lassiter, who remains an employee with Albany, but is no longer involved.
52. Upon taking on this role, Mrs Berridge became responsible for the management of this litigation, a task she has not previously had any experience of. However, during her oral evidence she made it clear that she had relied heavily on a team of legal and

technical experts to deal with the issues in the case. Accordingly she had plainly not considered the documents on file in any detail and had apparently not considered the pleadings – she was unable to say who had checked the pleaded facts. She had also not been involved in making decisions about the documents to be sent to the experts assisting Project Co. Despite her role as litigation manager, most final decisions about the conduct of the litigation appear to have been taken by the Board of Project Co, with input from Project Co’s lawyers and the wider team of experts.

53. I found Mrs Berridge to be a somewhat defensive witness, albeit that may have been a function of the fact that she was cross-examined by Mr Hickey, on behalf of Lendlease, on various issues with which she was either unfamiliar or only peripherally involved. Her first witness statement was extremely limited in its compass but Mr Selby KC, on behalf of Project Co, explained in closing, and I accept, that this is explicable by reference to the very limited nature of the factual dispute on the face of the pleadings and the requirements of the new Practice Direction as to the preparation of witness statements – a point which may also explain Mrs Berridge’s inability to answer some of the very general points put to her by Mr Hickey.
54. Overall, Mrs Berridge (who does not have technical expertise) was unable to assist the Court on many of the issues which Mr Hickey sought to explore, including events that occurred prior to her appointment in April 2019. In so far as Mrs Berridge was able to give relevant evidence, I accept that she was an honest witness who was endeavouring to assist the court.

Mr Avey

55. Lendlease called Mr Avey to give evidence relating to the period between 2016 and 2021. Mr Avey is a Commercial Director of Lendlease who deals with legacy issues on Lendlease projects and has day to day conduct of the dispute with Project Co. He was only able to give evidence about matters that have arisen since May 2016. He provided one witness statement.
56. Mr Avey was a transparently honest witness. He made concessions immediately when appropriate and did not attempt to evade difficult questions. He answered in a straightforward and direct fashion. Though cross-examination revealed there to be an error in his witness statement over dates, I accept that this was a genuine mistake.

Absent Witnesses

57. In closing, Mr Hickey made five specific points as to the failure on the part of Project Co to call witness evidence:

- (1) First, that Project Co had not tendered any witnesses who are directors or employees of Project Co itself and who were involved in the original construction of the Oncology Centre, making the point that there had been no attempt to prove by witness evidence any of the breaches of contract alleged against Lendlease in respect of its performance of the D&B Contract;
- (2) Second that Project Co did not call Mr Lassiter, who is still employed by Albany. Before Mrs Berridge assumed her role Mr Lassiter had plainly been involved in commissioning early investigations into alleged defects and in liaising with others over those defects. Mrs Berridge did not appear to have seen various documents that would have been available to him. She accepted that Mr Lassiter might have liaised with the Trust over whether it had agreed the Fire Strategy. Mrs Berridge confirmed in her oral evidence that she did not know of any reason why Mr Lassiter would not have been available to give evidence;
- (3) Third that Project Co had not tendered any evidence from Hoare Lea to deal with its Proposed Remedial Works solution;
- (4) Fourth that Project Co had not tendered any factual witness from the Trust to deal either with the question of whether the Rev 19 Fire Strategy was discussed, justified and approved, or with whether the Trust was aware of the recommendations from Hoare Lea as to the Proposed Remedial Works and intended to instruct that they be completed. In relation to this failure, Mr Hickey invited me to draw an adverse inference that representatives from the Trust had not been called “for fear about what they might actually say if put on the spot”. His submission was that the absence of the Trust “speaks volumes” about the credibility of Project Co’s case and that, at the very least, Project Co should have called the Trust Fire Officer to explain statements he appears to have made which might be said to undermine Project Co’s case, primarily because they suggest that the Trust does not consider there to be a significant fire safety risk by reason of the Defects. It was Mr Hickey’s contention that the Trust’s evidence may have been adverse to Project Co’s

case and that the court should take that into account. It was also his contention that if documents existed which evidenced the Trust's concerns about the Defects in Plant Room 2, those documents would have been produced; accordingly the court is entitled to infer that no such documents exist.

(5) Fifth, and related to the previous point, was Mr Hickey's contention that Project Co had produced no evidence, whether from Mrs Berridge or anyone else, that Project Co has complied with its contractual obligation to notify the Trust of the existence of the Defects, that those Defects need to be remediated and that there is a risk from fire whilst the Defects remain in situ. In his oral closing, Mr Hickey invited me to draw an inference that Project Co had not in fact provided such notification, primarily because it does not genuinely believe there to be a significant fire safety risk, but instead is pursuing this litigation with a view to reducing so-called "business continuity" risks.

58. Whilst Mr Hickey is right as to his first point, I do not attach any real significance to it. The breaches now alleged against Lendlease were not identified at the time of construction of the Oncology Centre and have only been identified some considerable time after Practical Completion. In the circumstances, it is unsurprising that Project Co has not sought to call any evidence as to Lendlease's performance of the D&B Contract at the time. As Mr Selby pointed out in closing, Lendlease has similarly chosen not to call evidence from representatives at AECOM. Furthermore, there is no evidence to suggest that representatives of Project Co took part in any discussions around the amendments to the Fire Strategy and thus there could be no expectation that witnesses from Project Co would be called to deal with this issue and no adverse inference from the failure to call such witnesses.
59. As for his second point, whilst it does appear that Mr Lassiter may have had relevant evidence to give and that he might conceivably have discussed issues relating to his understanding of the approval of the Rev 19 Fire Strategy by the Trust, the fact remains that he was not around at the time the Rev 19 Fire Strategy was in fact approved. Any evidence from him could only have addressed his understanding based on what he had been told and/or had seen in the documents long after the event and accordingly would have been of limited, if any, assistance. In any event, I did not understand Mr Hickey to be inviting me to draw any inference by reason of his absence. Again, a not dissimilar point was made by Mr Selby in relation to (i) the

absence of Mr Bekesi, who plainly carried out investigations into this claim for Lendlease and was apparently present in court throughout the trial, and (ii) Mr Alistair Hendrie who attended the December Meeting on which Lendlease places considerable reliance. In my judgment however, this case must, as Mr Selby submits, be determined on the basis of the evidence available to the court.

60. Mr Hickey's third point does not take matters any further. The Proposed Remedial Works are fully documented at considerable length, albeit that I was not really shown any of the documents during the course of the trial. Lendlease's experts barely addressed the Proposed Remedial Works and Mr Hickey barely cross examined Project Co's experts on their analysis of those Proposed Remedial Works. I fail to see how the attendance of a witness from Hoare Lea would have made any real difference.
61. Mr Hickey's fourth and fifth points both involve a submission that I should draw an inference and so I need to deal with them in more detail when I come to consider the issues around the approval of the Rev 19 Fire Strategy and the intentions of the Trust to carry out the Proposed Remedial Works. However, for present purposes I observe that Project Co and the Trust are separate entities, that there is no property in a witness and that Lendlease was just as able as Project Co to approach the Trust to obtain evidence had it wished to do so. Indeed, in many ways it would have made far more sense for Lendlease to approach individuals at the Trust for evidence given the positive case that it is running to the effect that the Trust agreed to the Rev 19 Fire Strategy and is not now interested in carrying out the Proposed Remedial Works owing to the fact that it does not consider there to be a serious risk of fire by reason of the Defects. In closing Mr Selby pointed out (and I accept) that the Trust's intentions had not been seriously in issue prior to the Amended Defence on 22 March 2022 and that the question of the Trust's intentions does not even feature in the list of issues agreed by the parties for trial. The absence of any pleaded issue is obviously a relevant consideration in the context of an invitation to draw an inference.

Expert Evidence – Mechanical and Electrical Engineering

62. Project Co called separate experts in the fields of electrical engineering and mechanical engineering. Lendlease called one expert to address both of these disciplines. All three experts met for the purposes of preparing a Joint Statement dated 10 December 2021.

Mr O'Mahony

63. Mr Shaun O'Mahony, BEng (Hons), a Chartered Engineer and Managing Director of MEP Efficiency was instructed by Project Co to provide expert evidence in the field of electrical engineering. Mr O'Mahony is an electrical engineer with over 30 years' experience of building service engineering in the construction industry and he is also employed by HKA, a leading global consultancy in risk mitigation and dispute resolution ("**HKA**") as an expert witness in electrical engineering matters. He has previously advised on a broad range of electrical problems and defects in healthcare buildings similar to the Oncology Centre.
64. Mr O'Mahony's report dated 4 March 2022 sets out his understanding of the contract documents, the scope of the various technical standards referred to in the contract documents and applicable at the time, and addresses the question of compliance in relation to the issues of non fire-resisting construction (Defects 1 and 1C), fire protection to power supply for smoke extract fans (Defects 1A and 1B), lack of cable segregation/separation to fire protection (Defects 8 and 9) and removal and renewal of transformer services and generators (Defects 5 and 6). Mr O'Mahoney then comments on the reasonableness of aspects of the package of Proposed Remedial Works.
65. During his relatively short cross examination by Mr Hickey, I formed the impression that Mr O'Mahony was genuinely trying to assist the court.

Mr McDonald

66. Project Co engaged Mr Neil McDonald as its mechanical engineering expert. Mr McDonald is a chartered building services engineer, a member of the Chartered Institution of Building Services Engineers, a member of the Society of Public Health Engineers and a member of the Academy of Experts. He is also a Technical Director of HKA. Mr McDonald has worked as a design and project engineer, at various levels, within building services design consultancies between 1987 and 2016, when he joined HKA. He has experience of design, specification and inspection of building services systems for many applications within the NHS Estate, including new build and refurbishment projects.
67. Mr McDonald's report dated 4 March 2022 addresses the mechanical building services aspects of the Proposed Remedial Works and, in particular, non fire-resisting construction (Defect 1), generator installation (Defect 1C), separation of

main electrical switchgear (Defect 3), service risers (Defect 4) and switchgear/transformer/generator rooms ductwork fire stopping (Defect 7). Mr McDonald did not carry out his own analysis in respect of remedial works that might be required; instead he was instructed to consider the Proposed Remedial Works identified by Hoare Lea and to provide an opinion as to the reasonableness of those works. His report does not address questions of liability.

68. During closing, Mr Hickey criticised Mr McDonald for merely adopting the Proposed Remedial Works identified by Hoare Lea without any independent critical analysis. However, I reject this criticism. Whilst it is true that Mr McDonald was not instructed to start from scratch in identifying the required remedial works, he nevertheless plainly spent time analysing and considering the works proposed by Hoare Lea and carrying out his own assessments and calculations designed to determine the reasonableness of those works. Attached to his report are various Appendices which evidence this analysis, including (i) his analysis as to the generator air handling systems; (ii) his analysis of Lendlease's design for transformer room ventilation; and (iii) his analysis of various technical factors within the remedial scheme documents. He was not challenged on any of these Appendices in cross examination.
69. Regrettably, it did become clear during his evidence that Mr McDonald had not always taken care to comply with his duties as a CPR Part 35 independent expert in that he had not always sought to ensure a level playing field with Lendlease's engineering expert, Mr Bradley. In particular, he did not inform Mr Bradley that he was carrying out analysis of the ventilation for the generators in Plant Room 2 and he did not immediately disclose to Mr Bradley the measurements that he obtained. Mr McDonald frankly conceded that he had failed to consider whether this analysis should be raised with Mr Bradley in the joint discussions between the experts that took place prior to finalisation of the Joint Statement and he admitted that Mr Bradley was first made aware of this work only when Mr McDonald's report was served. Mr McDonald was ultimately forced to accept that this omission was not consistent with his duties as a Part 35 expert and that as an experienced expert, he should have known better.
70. Notwithstanding this lapse (which did not, in this case, affect the overall quality of his evidence), I generally found Mr McDonald to be an honest witness, doing his best to assist the court. He came under further criticism from Mr Hickey for failing

to take any steps to consider the water mist suppression system advanced by Lendlease as a viable remedial solution. However, in circumstances where Mr O'Mahony and Mr Davis had considered this potential solution and given that Mr McDonald's evidence under cross examination was that while he had familiarity with gas suppression systems (and had opined on the reasonableness of quotations for such a system in his report) he had no direct experience of water mist systems, I regard this criticism as unfair. Lendlease's own experts barely mentioned the proposal for a water mist system, much less did they take steps to examine its viability in any detail.

Mr Bradley

71. Mr Paul Bradley, a partner of Troup Bywaters + Anders, a private partnership of electrical and mechanical engineers, was called as Lendlease's mechanical and electrical engineering expert. He has substantial experience in contracting and consultancy in both the public and private sectors. His experience includes managing design projects in the UK and abroad, including hospital projects.
72. Mr Bradley prepared two reports dated 13 March 2022 and 24 March 2022 respectively. His first report considers Lendlease's contractual obligations and then goes on to deal with each of the Defects. It records that he had not been instructed to examine in any detail the Proposed Remedial Works prepared by Hoare Lea, albeit that he "suggests" that these are proposals to improve fire related services at the Oncology Centre rather than to remediate defects within the original installation. His supplemental report responds to various issues raised in Project Co's expert reports (including its expert report on quantum) which had not previously been raised.
73. As was clear from paragraph 4.1.16 of his main report, Mr Bradley's evidence was heavily reliant upon the Rev 19 Fire Strategy containing an engineered solution which, whilst derogating from the technical standards, had been agreed and approved by all relevant parties. This placed him in difficulty from time to time in responding to the questions raised in cross examination. Whilst he was generally trying to assist the court, it became apparent (i) that there were some areas of his report that were not as comprehensive as they might have been (by way of example, he had not sought to consider whether the fire suppression works proposed by Lendlease provided the most optimal solution or whether they would create the need for consequential works and he had not given any consideration to the detail of the Plant Replacement

Strategy (“**the PRS**”) in the context of Defects 5 and 6); and (ii) that there were a couple of areas in his supplemental report on the subject of the Proposed Remedial Works which were not entirely accurate, had omitted reference to relevant evidence (including Appendices to Mr McDonald’s report), needed clarification and were capable of being misconstrued (as Mr Bradley accepted). For these reasons, I consider that I need to approach his evidence with a little care, testing its credibility against the evidence of the other experts.

Expert Evidence – Fire Engineering

74. Each party called an expert in fire engineering. The fire experts prepared two Joint Statements dated 9 December 2021 and 3 March 2022 respectively. The key issue between them was the adequacy of the Rev 19 Fire Strategy.

Mr Davis

75. Mr Jamie Davis, an experienced fire engineer and chartered building engineer with over 18 years’ experience in the fire safety industry, was instructed by Project Co to provide expert opinion in the field of fire safety engineering. Mr Davis is experienced in operational firefighting and incident command, fire safety regulation and enforcement and fire engineering consultation and design. He has a BEng in fire safety engineering and is a Member of the Institution of Fire Engineers, a Member of the Institute of Fire Safety Managers and a Chartered Member of the Chartered Association of Building Engineers. He is also an accredited fire risk assessor with the Institution of Fire Engineers and has been an accredited validator under the BAFE SP205 scheme. He is employed by HKA.

76. Mr Davis has a wide range of experience in evaluating and assessing passive fire protection measures in buildings, including in hospitals and healthcare buildings. He has recently been appointed by the National Health Service to review the national fire safety guidance for the fire safety design and management of hospitals.

77. Mr Davis prepared one report dated 4 March 2022 which highlighted the principles of fire safety design, relevant legislation and guidance, provided an overview of the general fire safety design approaches, addressed the fire engineering aspects of Defects 1, 1A, 1B, 1C, 3, 4, 7 and 8, provided an overarching opinion on the basis of design and construction and opined on the suitability of the Proposed Remedial Works from a fire engineering perspective. He did not give evidence in respect of Defects 5, 6 and 9.

78. Mr Davis conducted a site visit of the Oncology Centre on 10 November 2021 and inspected Plant Room 2. He describes the purpose of his visit in his report as being to “ratify the reports” provided by Hoare Lea and to familiarise himself with the Plant Room 2 area in general.
79. I am afraid that I found Mr Davis to be an overly combative witness. On occasions he appeared rather too keen to advocate Project Co’s case (sometimes prefacing his answers with the phrase “I suggest”), he did not always provide an answer to the questions he was asked and he sometimes appeared unwilling to make appropriate concessions.
80. Furthermore, it became apparent that Mr Davis had not paid rigorous attention to his duties as an independent expert. In particular, he had been in direct contact with Mr Don Court, employed by Hoare Lea, but had failed to inform Lendlease’s expert, thereby failing to ensure a level playing field. Mr Davis admitted that he had had conversations with Mr Court but had failed to take any notes of those conversations. He had attended a site visit at the Oncology Centre where he had been taken around Plant Room 2 by Mr Court but he did not inform Lendlease’s experts of this visit and did not address the visit in his report. In closing, Mr Hickey described this as a “free flow of information” of the type identified in *Dana UK Axle Ltd v Freudenberg* [2021] EWHC 1413.
81. Given that, in reality, there appears to be little between the fire experts (the only real issue being whether as a matter of fact the Rev 19 Fire Strategy adopted an agreed fire engineering solution), Mr Davis’ somewhat unfortunate approach to his evidence does not affect my overall views on the fire evidence in this case and Mr Hickey did not suggest that I should disregard Mr Davis’ evidence. Standing back, I have little doubt that although some of his evidence under cross examination was given with a view to persuasion, nevertheless Mr Davis was an experienced expert witness whose evidence was generally reliable. Nevertheless, once again, it is disappointing to see yet another expert over-stepping the mark in court and apparently forgetting the importance of his CPR Part 35 obligations.

Mr Jones

82. Lendlease instructed Mr Chris Jones, a fire engineer with 18 years’ of international consulting and surveying experience in fire engineering, as its fire expert. Mr Jones has a BSc in Applied Science with Forensic Measurement, an MSc in Fire &

Explosion Engineering and he is an Associate Member of the Institute of Fire Engineers.

83. Mr Jones has worked on fire engineering solutions for a wide range of buildings both in the UK and abroad. He has experience of fire testing and the performance of materials in fire. He has written numerous fire strategies for buildings across sectors and of various sizes and complexities across his 18 year career. He is currently employed by OFR Consultants, a firm of independent fire and risk consultants, and is one of the office leads for Manchester.
84. Mr Jones prepared one report dated 14 March 2022; its stated aim was to “review the adequacy and the design and construction at the time of construction” of the Oncology Centre. His opinion as identified in his short executive summary was that (i) in respect of Defect 3, an appropriate fire suppression system was required; (ii) the remaining allegations are not ‘defects’ because an engineering solution in respect of Plant Room 2 “was proposed and accepted by all stakeholders” – for this reason, the Fire Strategy was adequate.
85. Mr Jones did not visit the Oncology Centre, but undertook a virtual walkthrough after he had issued his report.
86. Broadly, I found Mr Jones to be an honest witness who was willing to make concessions and generally tried to assist the court. As with Mr Bradley, Mr Jones’ evidence was, however, heavily dependent upon the existence of an approved engineering solution to fire safety, even though he accepted that he had seen no justification for any such solution. The following exchanges in cross examination illustrate his position:

“Q. ...your view is that the fire strategy, revision 19, was adequate on the basis that it was agreed by relevant parties at the time?”

A. Correct”

...

Q...for you to be satisfied that this agreement was a sound basis underlying the fire strategy...you would want to know...or be satisfied that there had been this fire engineering approach presented to the relevant users before...giving their approval...?”

A Yes...looking at the correspondence there does appear to have been communication to the effect of the changes that were made. What I haven’t seen is the QDR process or anything that happened before that.

That informed building control, the trust, fire officer etcetera to agree to the changes.”

87. Mr Jones accepted that he had drawn inferences from the available documents as to the agreement by relevant parties to the Fire Strategy but that he could not add anything by way of fire safety expertise to this.
88. Notwithstanding Lendlease’s belated reliance upon the viability of a water mist suppression system, Mr Jones did not provide any evidence to support this case.

Expert Evidence - architecture

89. Project Co called one expert to address architectural issues arising in the context of the Proposed Remedial Works. Lendlease chose not to call an expert in this discipline.

Mr Kavanagh

90. Mr Bart Kavanagh, MA (Arch) LLM Dip Int Arb RIBA FCI Arb MAE Chartered Architect and Technical Director of HKA, was instructed by Project Co. He is an architect with more than 40 years’ experience in the construction industry and, during that time, he has been involved in the design and construction of a wide variety of building types.
91. Mr Kavanagh produced one report dated 4 March 2022 addressing matters relating to architectural items, specifically building fabric issues, arising in the context of the Proposed Remedial Works. Specifically, his report addresses (i) the reasonableness of building fabric proposals in Project Co’s outline remedial proposals arising under Defects 1, 1C, 3, 4, 7 and 8; and (ii) the implications on the internal and external fabric associated with plant replacement strategy (Defects 5 and 6).
92. I formed the impression, on his very brief cross examination, that Mr Kavanagh was a straightforward witness and I accept his evidence insofar as it is relevant to the issues I must determine.

Expert Evidence - Quantum

93. Each side relied upon the evidence of a quantity surveyor to assess quantum. The quantum experts produced two Joint Statements dated 10 December 2021 and 31 January 2022.
94. In their first Joint Statement they assessed the Stage 2 Works that formed part of the Proposed Remedial Works as identified by Project Co, albeit that various aspects of

their assessment expressly remained outstanding. Furthermore they sought to make a “preliminary apportionment” of the estimated remedial works costs to each of the Defects, an approach subsequently acknowledged by Project Co to have been erroneous.

95. In their second Joint Statement, they again focussed only on the Stage 2 Works and continued to identify issues which remained outstanding for consideration between them. This time they undertook what they described as “an arbitrary allocation” of the estimated remedial works costs to each of the Defects, again an approach which Project Co accepts was of no real assistance.
96. By the date of the trial, there was considerable agreement between the quantum experts, on a figures as figures basis.

Mr Finn

97. Mr Matthew Finn, BSc (Hons) LLM, FCI Arb, MCInstCES FCI OB FRICS MAE MEWI, Senior Managing Director (partner) of the Construction Disputes and Advisory Practice at Ankura Consulting (Europe) Limited, was called as Project Co’s quantum expert. Mr Finn has been practising as a quantity surveyor for some 19 years and has considerable expertise in relation to construction and engineering projects. During his career he has worked as a quantity surveyor for UK contractors on project delivery and he has been involved in large hospital projects and PFIs. Mr Finn is an accredited and practising member of the Academy of Experts.
98. Mr Finn prepared one report dated 4 March 2022 in which he provided his detailed evaluation of the claim in the sum of £6,242,274.47, focusing on the main differences between the experts.
99. Although Mr Finn was the subject of criticism from Mr Hickey in closing, I found him to be a helpful witness who appeared well aware of his obligations as an independent expert and his duty to the court. I formed the impression that his evidence was both well considered, and reasonable. In my judgment there was no real substance to suggestions from Mr Hickey that Mr Finn had failed to keep his opposite number abreast of all aspects of his investigations and analysis. Indeed, I accept Mr Finn’s evidence that he was in frequent communication with Mr Somerset, Lendlease’s quantum expert, and that he had tried to continue discussions with Mr Somerset following receipt of Mr Somerset’s supplemental report in advance of the trial.

100. It was revealed in cross-examination that Mr Finn had not previously been shown a quotation from Engie for the compartmentation work, to which I shall return. I do not consider this to have a material impact on the quality of Mr Finn's evidence and I accept his analysis of the Engie quote as being priced broadly in line with the conclusions reached by both experts.
101. A significant proportion of Mr Finn's cross-examination concerned discrepancies between the loss pleaded by Project Co in its original and amended statements of case and Mr Finn's expert report. I did not find this line of questioning to be particularly helpful. Furthermore it was accepted in closing by Mr Selby that in so far as the figures in the statements of case (in particular in relation to Defects 5 and 6) had included some "extra over" to account for the uncertainty around the quantum at that time, any criticism was best directed at the legal team.
102. In so far as the allocation of remedial works costs to individual Defects is concerned, Mr Finn adopts a new approach in his report, not foreshadowed in the Joint Statements, but now endorsed by Project Co, to which I shall return later.
103. For the most part, I consider that the approach taken by Mr Finn to the quantification of Project Co's claim was entirely reasonable. He used a mixture of SPONS adjusted rates and quotations to price each part of the remedial scheme. When quotations were used he obtained more than one so that comparisons could be made. His methodology is clearly set out and evidenced in numerous Appendices attached to his report. I shall return to the detail of it in due course.

Mr Somerset

104. Mr Somerset, BSc LLB (Hons) FAE FRICS FCI Arb MEWI FPD, a director of Somerset Consult, a firm of Chartered Surveyors, was Lendlease's quantum expert. Since 1986, he has specialised in the commercial, contractual and financial management of construction projects and disputes. As an employee of consulting organisations, he has spent a substantial portion of his time working with contractors, usually in the context of considering, preparing and analysing claims. He is a Fellow of the Academy of Experts and has considerable experience in acting as an expert witness, usually in the context of considering and analysing claims and final accounts.
105. Mr Somerset prepared a report dated 8 March 2022 together with a supplemental report dated 25 March 2022. Mr Somerset's first, and main, report deals with the

areas of difference that emerged over the course of expert meetings and discussions with Mr Finn. His assessment in his report of the value of the Proposed Remedial Works is £2,771,721.27. At the point of service of this report Mr Somerset records that he has not had the opportunity to consider or opine upon any positive case that Lendlease and their experts may advance. His supplemental report responds to various points raised in Mr Finn's report, increases the level of his assessment to £3,120,159.18 and also addresses the quantum of the scope of the remedial works proposed by Lendlease, which he quantifies at £489,210.91.

106. Mr Somerset was plainly an honest witness who was doing his best in his oral evidence to assist the court and was willing to make concessions where appropriate. However, for reasons to which I shall return, I consider that Mr Finn's evidence on quantum is to be preferred.

Expert Evidence – Overarching observations

107. I do not consider there to be anything in the complaint made by Lendlease that Project Co's experts have merely taken the alleged existence of the Defects at face value. Each has visited the Oncology Centre and carried out his own inspections and evaluations. I am satisfied that they have each investigated the alleged Defects and satisfied themselves of their existence. That they have taken this approach appears to me to be amply borne out by (i) the fact that Defect 2 was abandoned prior to trial following consideration of the matter by Mr Davis who produced calculations and concluded that the specific aspect of the design of Plant Room 2 with which Defect 2 was concerned could be shown retrospectively to comply with the Applicable Standards; and (ii) Mr McDonald's evidence in chief correcting paragraph 8.4.2 of his report dealing with required remedial works and identifying that two fire dampers he had previously identified as being necessary were not in fact required.
108. Ultimately, the very real problem for Lendlease arising in respect of its expert evidence going to liability is the extent to which the credibility of that evidence is dependent upon Lendlease's Fire Strategy Defence. The content of the Joint Statements and the numerous concessions made by Lendlease's experts during their evidence made this abundantly clear.
109. Before turning to consider the parties' arguments as to the Fire Strategy in more detail, I must first set out the contractual framework governing their relations.

THE CONTRACTUAL FRAMEWORK

The obligations of Lendlease

110. While Lendlease is not a party to the Project Agreement, pursuant to clause 5.1 of the D&B Contract Lendlease assumed the obligations, risks, and liabilities of Project Co under the Project Agreement:

“The Contractor shall, save as otherwise expressly provided in this Contract, perform and assume as part of its obligations under this Contract Project Co's obligations, risks and liabilities under the Project Agreement, the Schedules to the Project Agreement and the other Project Documents, insofar as the same relate to design, construction, commissioning, testing and completion of the Building Contractor's Works (as if the same were expressly referred to herein as obligations, risks and liabilities of the Contractor mutatis mutandis)”

111. The terms of the Project Agreement are therefore directly relevant to Lendlease and set out the obligations that Lendlease has assumed.

The Project Agreement

112. Clause 5.2 (General Standards) of the Project Agreement provides that:

“Project Co shall at its own cost be solely responsible for procuring that the Project Operations are at all times performed:-

5.2.1 in so far as not in conflict with an express obligation of Project Co under this Agreement, or where in relation to a matter there is no express obligation or standard imposed on Project Co under this Agreement, in accordance with Good Industry Practice;

5.2.2 in a manner consistent with the Quality Plans;

5.2.3 in a manner that is not likely to be injurious to health or to cause damage to property;

5.2.4 in a manner consistent with the Trust discharging its statutory duties and other functions undertaken by it as the same may be notified to Project Co from time to time;

5.2.5 in compliance with all Laws and Consents [...]; and

5.2.6 except to the extent expressly stated to the contrary in the Trust's Construction Requirements or the Service Level Specifications, in compliance with all applicable NHS Requirements.”

113. Schedule 1 to the Project Agreement defined:

- (1) “Good Industry Practice” as “using standards, practices, methods and procedures conforming to the Law and exercising that degree of skill and

care, diligence, prudence and foresight which would reasonably and ordinarily be expected from a skilled and experienced person engaged in a similar type of undertaking under the same or similar circumstances”;

- (2) “NHS Requirements” in relation to the Works as “Health Building Notes and Health Technical Memoranda and such other requirements as are designated as NHS Requirements in the Trust's Construction Requirements”;
- (3) “Trusts Construction Requirements” as “the requirements of the Trust set out or identified in Part 3 of Schedule 8 (Construction Matters) as amended from time to time in accordance with the terms of this Agreement”;
- (4) “Project Co’s Proposals” as “the document at Part 4 of Schedule 8 (Construction Matters) as amended from time to time in accordance with clause 40 (Variation Procedure)”; and
- (5) “Works” as “the design (including the preparation of all Design Data), construction, testing, commissioning and completion of the Facilities (other than the Equipment) (including any temporary works), the installation of Plant...”.

114. Clause 17.1 (Overall Responsibility) of the Project Agreement provides that:

“Project Co shall carry out the Works:-

17.1.1 so as to procure satisfaction of the Trust’s Construction Requirements;

17.1.2 in accordance with Project Co’s Proposals; and

17.1.3 in accordance with the terms of this Agreement.

To avoid doubt, the obligations in clauses 17.1.1, 17.1.2 and 17.1.3 are independent obligations. In particular:-

17.1.4 the fact that Project Co has complied with Project Co’s Proposals shall not be a defence to an allegation that Project Co has not satisfied the Trust’s Construction Requirements; and

17.1.5 the fact that Project Co has satisfied the Trust’s Construction Requirements shall not be a defence to an allegation that Project Co has failed to comply with Project Co’s Proposals.”

115. Clause 13.1 of the D&B Contract was in materially identical terms. Thus Project Co and Lendlease were both obliged to comply with the Trust’s Construction Requirements, Project Co’s Proposals, and the terms of the Project Agreement.

116. Clause 17.2 (Design Responsibility) of the Project Agreement provides that:

“Project Co warrants that it has used, and will continue to use, the degree of skill and care in the design of the Facilities that would reasonably be expected of a competent professional designer experienced in carrying out design activities of a similar nature, scope and complexity to those comprised in the Works.”

117. Part 3 of Schedule 8 to the Project Agreement sets out the Trust’s Construction Requirements, with its General Requirements to be found in Schedule 8, Part 3, Sub-Part C.

118. Paragraph 2.14 (Minimum Technical And Construction Design Standards) of Part 3, Sub-Part C, sets out the technical standards to be complied with in the design and construction of the Oncology Centre:

“2.14.1 Project Co shall ensure that the Facilities comply with Good Industry Practice, NHS Requirements, relevant statutory requirements and required consents except where expressly excluded in Project Co’s Derogations Report, including but not limited to the following:

2.14.1.1 Building Regulations; England and Wales

2.14.1.2 Fire Authority and Hospital Fire Officer requirements and Fire safety requirements, including, but not limited to, Firecode (HTM 81 to 87);

[...]

2.14.1.4 Relevant British Standards, Codes of Practice, or equivalent European industry recognised standards;

[...]

2.14.1.6 Health Technical Memoranda (HTMs) in relation to Facilities in Sub-part D this schedule 8 Part 3;

[...]

“2.14.2 Where two or more of the above are applicable the higher standard shall be adopted.”

119. Paragraph 3.2 (Minimum Architectural Standards) of Part 3, Sub-Part C, provides that:

“3.2.2 Project Co shall take full account of the following:

[...]

3.2.2.9 Health Technical Memoranda

[...]

3.2.3 Project Co shall design the Facilities to comply with the following:

[...]

3.2.3.2 The performance of components shall be as described in sections 1-3 inclusive of the following HTMs and their related appendices and references unless otherwise states elsewhere:

[...]

3.2.3.2.19 HTM 81-Fire Precautions in New Hospitals

3.2.3.2.20 HTM 86 - Fire Risk Assessment in Hospitals”

120. Paragraph 3.8 (Handback & Residual Life Expectancy) of Part 3, Sub-Part C, provides that the Oncology Centre must be designed and built in such a way so as to make maintenance and replacement as convenient as possible:

“3.8.2.4 Materials and components forming part of the Facilities, which require maintenance and replacement within the life of the Facilities, must be selected, located and fixed in such a way as to minimise future inconvenience, disruptions and to avoid temporary closure of the Facilities”

121. Paragraph 4.6 (Loadings and Structural Flexibility) of Part 3, Sub-Part C, provides that:

“4.6.6 Project Co shall include, within their design, provision for removal, replacement and upgrading of installed plant and equipment. As part of this element of design, a comprehensive replacement strategy shall be prepared for implementation. This strategy shall, wherever possible, consider how these works can be undertaken whilst minimizing disruption to the function of the completed Facility.”

122. Paragraph 5 (Mechanical and Electrical Engineering Requirements), of Part 3, Sub-Part C sets out the applicable mechanical and electrical technical standards:

“5.1.1 Project Co shall in constructing the Facilities, comply with these Mechanical and Electrical Engineering Requirements. These requirements shall be read in conjunction with Schedule 8 Part 3; Sub-Part D – the Project Specific Requirements.

5.2 Minimum Engineering Standards

5.2.1 Project Co shall comply with the following:

5.2.1.1 BS 7671 (IEE Wiring Regulations);

[...]

5.2.1.7 British and European Harmonised Standards and Specifications and Codes of Practice;

5.2.1.8 Health Technical Memorandum, in accordance with 2.14;

[...]

5.3 Performance Standards

5.3.1 Project Co shall ensure that the services designs comply with current industry standards and shall comply, but not be limited by, the following codes:

5.3.1.1 Chartered Institution of Building Services Engineers (CIBSE) Guides;

5.3.1.2 The Institution of Electrical Engineers Wiring Regulations (BS 7671)

[...]

5.3.1.6 HTM 2007 Electrical services supply and distribution

[...]

5.3.1.8 HTM 2011 Emergency electrical services”

123. Schedule 8, Part 3, Sub-Part D is concerned with the Trust’s “Project Specific Requirements”. Paragraph 11.3 of Part 3, Sub-Part D deals with the Fire Strategy to be prepared by Project Co and expressly contemplates the potential for Project Co’s designs to fall outside HTM 81:

“11.3 Fire Strategy

11.3.1 Project Co shall prepare Fire Strategy drawings that show the following information

11.3.1.1 The Position and fire rating of fire compartment and sub compartment walls, including cavity barriers if appropriate.

11.3.1.2 The fire resistance of elements of structure, walls, and doors.

11.3.1.3 The location of fire Hazard rooms.

11.3.1.4 Ventilation drawings including provisions for fire stopping.

11.3.1.5 The provision of fire alarm system to HTM 82 standard, including the location of actuation points, detectors, sounders and where appropriate, control panels.

11.3.1.6 The provision of an Emergency Lighting system to HTM 2011 standard showing location of emergency lighting luminaires.

11.3.1.7 Access and facilities for the fire Service (where appropriate).

11.3.1.8 The location of fire fighting equipment.

11.3.1.9 The positions of Signage and notices.

11.3.2 Where Project Co's design is outside the strict interpretation of HTM 81, or Project Co proposes a different fire precautions philosophy, Project Co shall adopt a fire engineering approach.

11.3.3 The design shall comply with the requirements of Firecode, and incorporate the fire precautions principles outlined in HTM 81. **Any areas of non-compliance should be identified and justified by a fire engineering approach to provide a standard equal to or better than HTM 81 in compliance with clause 1.7 of HTM 81 [...]** (emphasis added).

124. Pausing there, it is an important part of Project Co's case that wherever there was any deviation from HTM 81 in the design of the Fire Strategy, the Project Agreement required this to be identified in the Fire Strategy and expressly justified by a fire engineering approach.

125. Paragraphs 11.24 and 11.25 of Part 3, Sub-Part D provides as follows:

“11.24 Low Voltage Distribution Network

11.24.1 A new Low Voltage switchroom shall be provided by Project Co, in accommodation adjoining the HV switchgear and transformers, which shall accommodate the main LV switchboards.

11.24.2 The LV boards shall have sets of bus bars interconnected by means of bus couplers switches, with bus bars being served from one of the transformers in adjoining accommodation for security of supply.

11.24.3 In the event of the failure of one the transformers, the live transformers can serve selective loads on the off line bus bars if so desired.

11.25 Standby Diesel Generators

11.25.1 In the event of failure of the electricity supply Project Co shall provide a standby service, made available from diesel generators located adjacent to the substation. On failure of the normal supply, the generators shall automatically start and feed all essential services via the changeover mechanism. Acoustic attenuators shall be installed to reduce generator noise levels. The Trust shall provide from their central store, via their existing ring main an oil supply to service the generators. All adaptation works in connection with the link for the New Oncology Wing shall be carried out by Project Co. ASCO switches shall be provided for synchronous no break connection for load testing. Alternatively full synchronising of generators may be provided.

11.25.2 In the unlikely event of one generating set not starting, the generator supply can be isolated, bus bar coupling switching can be closed and an alternative generating set can then be utilised to serve selective loads on both sets of essential bus bars if so desired.

11.25.3 The standby diesel sets shall be sized to supply both essential and non-essential services on the assumption that the bus coupler between essential and non-essential bars shall be closed.”

126. ASCO is the manufacturer of closed transition switches, which switch the feed into each LV switchboard between primary and secondary supplies, as appropriate.

127. Schedule 8, Part 3, Sub-Part F to the Project Agreement sets out the Trust’s “Non Clinical Specifications”, including

“16.4.2 **Standby/Electrical Distribution**

16.4.2.1 Project Co shall establish the electrical distribution system by the construction of 11000V substations in the basement plantrooms formed by the extension of the existing HV ring main system serving St James’s Hospital.

[...]

16.4.2.10 Project Co shall serve the Facilities by modifying the existing HT ring with a minimum of 2 No Transformers supported by standby diesel generators. ASCO automatic or similar load switching shall be provided to avoid loss of supply during testing periods. Full synchronous sets may be an option with full network analysis. Spare capacity shall be built into the design by Project Co to assist in future flexibility, i.e. 10% growth/ spare switches/ circuits.

16.4.2.11 Project Co shall ensure that electrical distribution shall consist of electrical risers through the Facilities with switchrooms in or adjacent cupboards **servicing a split distribution system of essential and non-essential services**. However 100% standby cover is required on standby generators and flexibility of operation of switchgear is required **to ensure system reliability**.

16.4.2.12 Project Co shall ensure electrical integrity by the addition of UPS systems to each of the following:

Theatre power

ICU/ITU/HDU power

All similar areas with Life Support Equipment”

(emphasis added).

128. Essential circuits are those connected to both a primary and secondary power supply so that they can operate in the event that there is a failure in the primary supply. Non-

essential circuits are those connected to the incoming primary supply only. A UPS system is an Uninterruptible Power Supply.

129. Sub-Part F identified at the outset that it was designed to detail, amongst other things, the services that the Trust was to provide in the Oncology Centre and “the requirements of Project Co to enable these services to be undertaken”. It cross referred to Schedule 14 as containing “those services that Project Co will provide”. Schedule 14 is concerned with the “Service Level Specification” and includes, in Sub-Part C, various “Specific Service Specifications”, including “Energy and Utilities Management”. Paragraph 4.2 (02) of the Energy and Utilities Management Specification required Project Co to ensure the supply of continuous electrical power to the Oncology Centre:

“Project Co shall ensure an adequate continuous supply of Utilities (downstream of the connection point with the Trust’s infrastructure) is available 24 hours a day, 365(6) days per year for the duration of the Contract Term. (to the extent that an adequate continuous supply is provided by the Trust to such connection point). This shall include the provision of standby provision for essential electrical power and water supplies. Project Co shall ensure the provision of Utilities such that wherever possible Utilities can be maintained without disruption.”

130. Unlike the other obligations of the Project Agreement set out above, this provision was not concerned with obligations on the part of Project Co which related to the “design, construction, commissioning, testing and completion” of the Works (see clause 5.1 of the D&B Contract). It does not oblige Lendlease to ensure an adequate continuous supply of utilities after practical completion of the Oncology Centre. However, I accept Mr Selby’s submission in closing that it does, at least, provide context for various of Lendlease’s contractual obligations, including in particular its obligation to provide a split distribution system of essential and non-essential services, as required by paragraph 16.4.2.11 of Sub-Part D, Part 3 to Schedule 8 of the Project Agreement. I shall return to this point in due course.
131. Volume 7(6) of Part 4 of Schedule 8 to the Project Agreement contained the Rev 12 Fire Strategy, which thereby formed part of Project Co’s Proposals within the Project Agreement.

The D&B Contract

132. Pursuant to clause 4.2 of the D&B Contract, Lendlease (identified as “the Contractor”) is on notice of the “Project Documents”:

“The Contractor acknowledges that it is (and the Contractor shall be deemed to be) on notice as to the terms of the Project Documents, including the obligations and potential liabilities of Project Co arising under them.”

The definition of “Project Documents” set out at Schedule 1 to the D&B Contract includes the Project Agreement.

133. Clause 5.1 of the D&B Contract, under which Lendlease assumed the obligations of Project Co, is set out at paragraph 110 above.

134. Clause 5.2 provides for an indemnity from Lendlease to Project Co:

“The Contractor shall ensure that none of the following occur and shall indemnify Project Co against all claims, proceedings, loss, damage, costs and expenses (including legal costs) suffered or incurred in relation to any of the following save to the extent caused or contributed to by any breach by Project Co of this Contract or the negligence of Project Co, its employees, agents or sub-contractors agents or subcontractors (excluding the Contractor, the Estates Maintenance Contractor, the MES Provider and its sub-contractors).

5.2.1 Any breach, non-observance or non-performance by the Contractor of those of its obligations referred to in clause 5.1.

5.2.2 Any act or omission of the Contractor, a subcontractor of the Contractor, or their respective employees, servants or agents which causes, contributes or otherwise gives rise to any breach by Project Co of any of its obligations pursuant to, or liability under, the Project Documents or otherwise gives rise to any other liability on the part of Project Co to the Trust, the Funders or any Project Participant or pursuant to any Law or Consent.

5.2.3 Any negligence or breach of statutory duty on the part of the Contractor, a subcontractor of the Contractor, or their respective employees, servants or agents.”

135. Clause 12.1 is in materially the same terms as clause 5.2 of the Project Agreement:

12.1 The Contractor shall at its own cost be solely responsible for procuring that its obligations under this Contract are at all times performed:

12.1.1 in so far as not in conflict with an express obligation of the Contractor under this Contract, or where in relation to a matter there is no express obligation or standard imposed on the Contractor under this Contract, in accordance with Good Industry Practice;

...

12.1.3 in a manner that is not likely to be injurious to health or to cause damage to property;

...

12.1.5 in compliance with all Laws and Consents (including without limitation the giving of notices and the obtaining of any such Consents) and so as not to prejudice the renewal of such Consents; and

12.1.6 except to the extent expressly stated to the contrary in the Trust's Construction Requirements or the Service Level Specifications, in compliance with all applicable NHS Requirements.

136. Clause 13.1 is in materially the same terms as clause 17.1 of the Project Agreement:

“13.1 The Contractor shall carry out the Building Contractor's Works:

13.1.1 so as to procure satisfaction of the Trust's Construction Requirements;

13.1.2 in accordance with Project Co's Proposals;

13.1.3 in accordance with the other Sub-Contractors' Statements of Requirements;

and

13.1.4 in accordance with the terms of this Contract.

To avoid doubt, the obligations in Clauses 13.1.1, 13.1.2, 13.1.3, and 13.1.4 are independent obligations. In particular:

(a) the fact that the Contractor has complied with Project Co's Proposals shall not be a defence to an allegation that the Contractor has not satisfied the Trust's Construction Requirements; and

(b) the fact that the Contractor has satisfied the Trust's Construction Requirements shall not be a defence to an allegation that the Contractor has failed to comply with Project Co's Proposals.

137. Pausing there, I observe that Lendlease had to carry out its Works (amongst other things) in accordance with the Fire Strategy as varied from time to time, as it formed part of Project Co's Proposals. However, as is clear from the final paragraphs of clause 13.1, compliance with the Fire Strategy was in addition to Lendlease's obligation to comply with the Trust's Construction Requirements. Moreover, Schedule 1, paragraph 2 to the D&B Contract provides that:

“Where one provision of this Contract imposes upon the Contractor a standard, duty or obligation which is more onerous than, or additional to, that imposed by another provision, this shall not be treated as an inconsistency for the purposes of paragraph 1 above. Rather the relevant standards, duties or obligations shall, so far as possible, be treated as

cumulative, failing which the more onerous standard, duty or obligation shall prevail.”

138. Clause 13.2 provides that:

“13.2 Without prejudice to its other obligations under this Contract, the Contractor warrants that:

13.2.1 the Building Contractor's Works have been, and will continue to be, designed with the degree of skill and care that would reasonably be expected of a competent professional designer experienced in carrying out design activities of a similar nature, scope and complexity to those comprised in the Building Contractor's Works; and

13.2.2 that it will carry out the Building Contractor's Works in a good and workmanlike manner using the degree of reasonable skill and care to be expected of a design and construct contractor experienced in carrying out the construction works of a similar nature, scope and complexity to the Building Contractor's Works.”

139. Although not defined anywhere in the D&B Contract, the reference to the Building Contractor is plainly a reference to Project Co.

140. Clause 15.1 provides that:

“The Contractor accepts full responsibility for designing the Building Contractor's Works (including the selection of materials for incorporation in the Building Contractor's Works) so that the Building Contractor's Works will satisfy all the requirements of this Contract.”

141. Clause 15.2 provides that:

“15.2 The responsibility of the Contractor for the design of the Building Contractor's Works as stated in clause 15.1 (and the Contractor's warranty given under clause 13.2.1) includes:

15.2.1 design comprised in the Trust's Construction Requirements;

15.2.2 design comprised in Project Co's Proposals;

[...]

and the Contractor shall not be relieved of such responsibility or from liability under its warranty as aforesaid by virtue of any such documents having been prepared, reviewed, approved or commented upon by or on behalf of Project Co [...] or by virtue of the incorporation of any such documents within this Contract”

Technical Standards

142. In its Amended Particulars of Claim at paragraph 24, Project Co identified numerous statutory requirements, NHS requirements and guidance/codes of Good Industry Practice which it said applied at the date of the design and construction of the Oncology Centre and which Lendlease was required to comply with pursuant to the provisions of clauses 15.2, 17.1 and 17.2 and the paragraphs of Part 3 to Schedule 8 and Schedule 14 of the Project Agreement referred to above. Project Co referred to these as “**the Applicable Standards**”. Lendlease admitted this paragraph.
143. Notwithstanding its long list of Applicable Standards, the key standards relied on by Project Co to demonstrate breach of contract by Lendlease are HTMs 81, 2007, and 2011, Requirements B2 and B3 of the Building Regulations 2000 and BS 7671.
144. HTMs are produced by NHS Estates, an Executive Agency of the Department of Health and Social Care and are designed to “give comprehensive advice and guidance on the design, installation and operation of specialised building and engineering technology used in the delivery of healthcare” (see for example HTM 2007 ‘Electrical Services supply and distribution, Design Considerations’ (1993)).
145. It is common ground that, as Lendlease pointed out in its Amended Defence, in circumstances where HTMs provide guidance, they are not always applicable to every design solution and it is possible to agree derogations from that guidance.
146. I shall return to the detailed provisions of the relevant Applicable Standards later in this judgment when looking at the individual Defects. For present purposes, however, it is useful to understand the scope of the HTMs and of BS7671.

HTM 81

147. HTM 81 is concerned with ensuring the safety of users of healthcare facilities in the event of fire, a concept referred to by the parties during the trial as “life safety”. Mr Davis described the need to ensure life safety in uncontroversial terms in his report as follows:
- “...a building will be designed so that in the event of a fire, persons are not placed at unreasonable risk and are able to escape”.
148. The introduction to HTM 81, ‘Fire Precautions in new hospitals’, first published in 1996, records that it is:
- “a code of practice which recognises the special requirements of fire precautions in the design of new hospital premises and should allow the

current statutory regulations to be applied sensibly within a framework of understanding”.

149. The scope of HTM 81, is set out at section 1:

“1.1 This technical memorandum provides recommendations and guidance for designers, on the fire safety measures which should be incorporated into the design of new hospitals...”

1.2 It should be used in the design of:

- a. new NHS hospitals;
- b. major new extensions to existing NHS hospitals;

[...]

1.4 HTM 81 should be used as guidance on fire safety in all parts of a hospital, including departments or areas providing ancillary services which are planned as an integral part of a hospital building

[...]

1.12 The central purpose of this document is to provide guidance on the standards of fire safety expected in new NHS hospitals.”

150. It is clear that the detailed guidance set out in HTM 81 is not binding and that derogations are permissible if a fire safety engineering approach is taken:

“1.7 This document describes one way of achieving an acceptable standard of fire safety within new NHS hospitals, but it is recognised that there may be other ways of achieving a similar standard by adopting a fire safety engineering approach. There is no obligation to follow the guidance in this document. A fire safety engineering approach that takes into account the total fire safety package can provide an alternative approach to fire safety. If an alternative approach is used, the responsibility is placed upon the user to demonstrate that the approach achieves similar fire safety objectives to this document.”

151. Pursuant to paragraph 1.15 of HTM 81, the objective of the guidance is to reduce the risk as “far as is reasonably practicable”:

“1.15 It is not possible to provide absolute safety from fire. The guidance in this document should reduce the risk to patients, visitors and staff as far as is reasonably practicable.”

152. Pursuant to paragraph 5.72 of HTM 81:

“Emergency electrical services should be designed to comply with the requirements of HTM 2007 – ‘Electrical services: supply and distribution’ and HTM 2011 – ‘Emergency electrical services’.”

HTM 2007 and HTM 2011

153. HTM 2007 and HTM 2011 are concerned with the need to ensure the maximum reliability and integrity of electrical supplies so as to enable hospitals and other healthcare premises to continue to operate whatever the circumstances (which may include a fire). In that sense, they are therefore concerned with “business continuity”, a phrase which Project Co uses as a label for the risks that, in particular, HTM 2007 and HTM 2011 are designed to address. Mr Davis described this as “particularly relevant to a hospital that is likely to be required to continue to operate during a fire and/or have its operations re-established as soon as possible after a fire”. References to business continuity in this judgment are intended to be understood in this sense.

154. The introduction to HTM 2007, ‘Electrical Services supply and distribution’, first published in 1993, states that it:

“focuses on the

- a. legal and mandatory requirements;
- b. design applications;
- c. maintenance;
- d. operation

of electrical services supply and distribution in all types of healthcare and personal social services premises”

155. Its scope is identified in Section 1:

“1.1 Electrical services form an integral part of the healthcare and personal social services premises (HCP) supply and distribution network in meeting both safety and functional requirements.

[...]

1.4 Healthcare and personal social services premises are totally dependent upon electrical power supplies, not only to maintain a safer and more comfortable environment for patients and staff, but also to give greater scope for treatment using sophisticated medical equipment at all levels of clinical and surgical care. Changes in application, design and statutory requirements have led to the introduction of a new generation of equipment and new standards of reliability; hence, a large expansion of material is included in the current HTM.

1.5 Interruptions in electrical power supplies to equipment can seriously disrupt the delivery of healthcare, with serious consequences for patient

well-being. Healthcare and personal social services premises must therefore ensure that their electrical installation provides maximum reliability and integrity of supplies. Every effort must be made to reduce the probability of equipment failure due to loss of power from the regional electricity company and from internal emergency power sources.”

156. HTM 2011, ‘Emergency Electrical Services’, first published in 1992, applies to: “...emergency and essential electrical supply equipment in all types of health care and personal social services premises”.

BS 7671

157. BS 7671 “Requirements for Electrical Installations; IEE wiring Regulations Sixteenth Edition”, including 2004 amendments, is concerned with the requirements for electrical installations generally.

158. Chapter 12, paragraph 120-01-01 provides that:

“This standard contains the rules for the design and erection of electrical installations so as to provide for safety and proper functioning for the intended use.”

159. Chapter 13 contains fundamental principles, including at 130-03-01 that:

“So far as reasonably practicable the electrical installation shall be so arranged that the risk of ignition of flammable materials due to high temperature or electric arc is reduced”

and at 130-03-02 that:

“Electrical equipment shall not present a fire hazard to adjacent materials”.

160. Chapter 56 is titled “Supplies for Safety Services” and provides at 561-01-01 that:

“For a safety service, a source of supply shall be selected which will maintain a supply of adequate duration.”

Paragraph 561-01-02 states that:

“For a safety service required to operate in fire conditions, all equipment shall be provided, either by construction or by erection, with protection providing fire resistance of adequate duration.”

161. A Safety Service is defined in BS 7671 as “An electrical system for electrical equipment provided to protect or warn persons in the event of a hazard, or essential to their evacuation from a location”. Electrical systems supplying fire alarms, fire-fighting equipment and smoke extract fans fall into this category. Furthermore, it is Project Co’s case, which I accept, that, pursuant to the provisions of the IEE

Guidance Note 7, “Special Locations” (“GN7”), which provides guidance on compliance with BS 7671 and is one of the agreed Applicable Standards, essential systems provided in Medical Locations that cannot be permitted to fail in any conditions, require the same protection as, or are to be treated as if they are, Safety Services required to operate in fire conditions within the meaning of Chapter 56 of BS 7671.

THE FIRE STRATEGY

162. Before considering the parties’ detailed arguments on the Fire Strategy, I should first identify an issue that arose in closing over the extent to which this case in fact turns on the court’s decision in relation to the Rev 19 Fire Strategy. This issue really arises by reference to the way in which the case has been pleaded by Project Co and responded to by Lendlease.

The nature of Project Co’s case

163. In closing, Mr Hickey maintained that the essence of this case is fire safety; that the allegations are all concerned with the need to ensure life safety, that the failures alleged focus on the failure to comply with the fire safety principles in HTM 81 and that the case is not concerned with issues of business continuity. This approach was perhaps unsurprising given Lendlease’s heavy reliance on its Fire Strategy Defence.

164. However, having considered the pleadings in detail, I reject this submission. I confess that I was somewhat surprised to see the statement in Mr Selby’s written closing submissions that “Project Co’s claim relates **primarily** to the electrical HTMs, which address Business Continuity as well as BS 5588, BS 7671 and paragraph 16.4.2.11 of Part 3, Sub-part F to Schedule 8 of the Project Agreement”, as this was not consistent with my understanding of the case, having heard the opening submissions and the evidence. However, Mr Selby clarified the position in his oral closing and I am satisfied that Project Co’s case has been plainly put on the grounds of both life safety (HTM81) and business continuity (HTM 2007 and 2011, amongst others).

165. The issues at play on the pleadings are in summary (i) whether the Rev 19 Fire Strategy demonstrates compliance with all Applicable Standards (in particular HTM 81) and (ii) whether there has been a breach of Applicable Standards (such as HTM

2007 and HTM 2011) relevant to the requirement to ensure that the Oncology Centre can continue to operate (including in the event of a fire).

166. The fact that perhaps the main focus of the trial has been on the Fire Strategy and that the agreed issues for trial also concentrate to a substantial extent on the Fire Strategy is purely a function of Lendlease's decision to make the Fire Strategy the main focus of its Amended Defence. However, the Applicable Standards identified in the Amended Particulars of Claim plainly include standards that are concerned with issues of business continuity and the Scott Schedule attached to Project Co's Amended Particulars of Claim expressly pleads issues of business continuity in addition to issues of fire safety.
167. Thus by way of example, the defects identified in respect of Defect 1 include that the single fire compartment that includes the Electrical Substation contains critical electrical equipment which "provides both the primary and secondary sources of power to the entire Oncology Centre" and refers to the lack of separately routed power supply cabling "so as to reduce the risk of fire affecting both the primary and secondary power supplies". The breaches identified include breaches of HTM 2007 and HTM 2011. Defect 9 is expressly concerned with the failure to differentiate between essential and non-essential cables throughout the Oncology Centre and the installation of all cables as non-essential cables without segregation. Project Co alleges breach of the requirement for a split distribution system in paragraph 16.4.2.11 of Schedule 8, Part 3, Sub-Part F to the Project Agreement.
168. Furthermore, although Lendlease focused in its Amended Defence and in Appendix 1 to that Defence on its Fire Strategy Defence (even apparently praying the Fire Strategy Defence in aid in response to allegations that were clearly concerned with issues of business continuity), it plainly recognised that such defence could not address all of the issues being alleged against it. Thus in paragraph 18 of its Amended Defence it pleaded that "...the Fire Strategy addressed the power to life-safety equipment only, but was not required to address issues of business continuity".
169. In its Reply, Project Co emphasised the dual obligations on Lendlease to comply with the Fire Strategy and the Applicable Standards. In its Reply to Appendix 1 to the Amended Defence, Project Co expressly referred to its case on business continuity (for example at paragraph 5.2 where it identified that Plant Room 2 "utilises the same transformers, switchgear and generators to supply fire life safety equipment, non-fire life-safety equipment and equipment providing power supplies

for the purpose of business continuity”) and expressly pleaded on more than one occasion that “The Defence does not explain and the Fire Strategy does not demonstrate the equivalence of the alleged ‘holistic strategy’ and/or ‘engineered solution’ for Plant Room 2 with the requirements of the Applicable Standards”.

170. In my judgment, while Project Co’s closing skeleton argument may have gone rather too far in asserting that its claim relates “primarily” to the electrical HTMs which address business continuity, nevertheless there can be no question that compliance with those HTMs and the need for the Oncology Centre to have sufficiently robust electrical systems (compliant with, amongst others, HTM 2007, HTM 2011 and BS 7671) to ensure that it could continue operating in the event of a power failure is squarely in issue in these proceedings. Paragraph 11.3.3 of Part 3, Sub-Part D to Schedule 8 to the Project Agreement reiterated that Project Co’s design had to comply with HTM 81 and specifically addressed the permissibility of alternative fire engineering approaches in respect of HTM 81, requiring the same to achieve a standard of safety equal to or better than HTM 81. However, neither paragraph 11.3.3, nor any other provision of the Project Agreement permitted an alternative engineered solution in respect of the requirements of any other HTMs.
171. The Rev 19 Fire Strategy is plainly relevant to some of the Defects alleged in these proceedings but others depend wholly or in part on breaches of other HTMs and Applicable Standards. The list of issues agreed between the parties recognised this distinction in formulating an issue which required a determination on the question of whether there had been a breach of contract, notwithstanding that the Works were completed in accordance with the Fire Strategy.
172. I now turn to deal with the specific issues identified by the parties in respect of the Fire Strategy.

Issues 1 and 2: Was the Fire Strategy discussed and/or reviewed and/or agreed and/or approved by the Trust and/or Project Co and/or Building Control? If so, to what extent and in what respects?

173. There is no witness evidence on this issue, which falls to be determined on the documents. From these it is apparent that there was limited discussion of the Fire Strategy in the Autumn of 2007. However, I shall need to consider the documents in a little detail to determine the significance, if any, of these discussions. For the sake of clarity I observe that the reference in these issues to the Fire Strategy is a reference to the Rev 19 Fire Strategy.

174. It is common ground that, as I have already said, the Electricity Substation was initially to be contained in 60-minute separate compartmented plant areas. This compartmentation separated each of the HV transformers from the LV switchgear, one of the generators from the other two and the generator control panels were separately located and compartmented. This arrangement was clearly shown in the Architect's drawing LOW-A-4200-B1-501 Rev P11 (dated 17th June 2004). It appears to be common ground between the fire experts that there could have been no issue with this design, if implemented.

The Rev 12 Fire Strategy

175. The rationale behind the fire compartmentation and other fire protection related issues for the B1 Plant Room 2 area was set out in AECOM's Rev 12 Fire Strategy (LOW/E/6000/RP/001/F3), which was included in Project Co's Proposals at Schedule 8 to the Project Agreement.

176. The executive summary in the Rev 12 Fire Strategy sets out the approach:

“This document addresses the holistic fire strategy for the New Oncology Wing at the St James University Hospital. The pertinent elements of the strategy are as detailed below. Any areas of non-compliance or derogation are identified in the relevant sections with the Project Companies solution presented as part of the Holistic Strategy. “

177. The executive summary goes on to identify six principal issues including:

“**The design** seeks to be code-compliant - HTM 81, and Approved Document B. The standards recommended in these documents and others to which they refer, would be assumed to be included with departures from the codes being highlighted, and alternative solutions proposed, as provided for in HTM 81, para 1.7. The objective is then to ensure the non-compliant aspects do not compromise those that are. An equivalent appropriate level of safety is then proposed.”

and

“**Compartmentation** - code-compliant in terms of maximum area (sub-divided otherwise), and those with smaller areas can accommodate patients from the largest adjacent one. Compartment floors are 120 minute fire-rated and department boundaries are at 60 minutes FR, except to the atrium. Sub-compartments will be at ½ hour FR. The covered atrium is enclosed with toughened glazing on the 1st floor, the construction of which will not compromise compartmentation, and will have effective and therefore suitable fire enclosure. This is based on fire size control and mechanical smoke extract ensuring suitable separation.”

178. Under the heading “Objectives”, the Rev 12 Fire Strategy says this:

“Since aspects of the design do not fit easily into the prescriptive guidance of the HTM's, and particularly HTM 81 guidance for new hospitals, the approach being adopted is to use fire safety engineering. This approach is provided for in HTM 81 - para 1.7. Reference at this stage is also made to Approved Document B, fire safety, in support of Building Regulations. The whole design will not be 'engineered', but aspects will be. The overall package of provisions is intended to meet the standard of recommendations in the HTM by conformity or equivalence. Where the two meet, the engineered aspects will not compromise the other.”

179. Under the heading “Scope”, the Rev 12 Fire Strategy provided that:

“This document will focus on outlining the design in respect of the principles of life safety, the relationship of patient access areas to other parts of the hospital and means of escape generally.”

180. The Rev 12 Fire Strategy, which attached the Architect’s drawing referred to above (LOW-A-4200-B1-501 Rev P11) showing compartmentation within the Electricity Substation, contained a table at paragraph 6.6.2 identifying compartment areas “as published by the architects” including that the plant level on B1 was a single compartment of 1926m².

181. However, it was also stated:

(1) (at paragraph 5.2) that:

“The following hazard departments requiring a minimum of 60 mins fire resisting separation have been recognised in the Fire Strategy: ...Main Electrical Switchgear (60 minutes)”;

(2) (at paragraph 7.2) that there should be:

“fire suppressant system in the HV/generator room”;

(3) (at paragraph 7.4) that sprinkler protection systems would provide cover to (amongst other areas) Level -1 (with the exception of clean areas);

and

(4) (at paragraph 7.5) that:

“The generators shall be located within the level –1 designated plant area, contained within their own rooms. Each generator room is a 1 hour fire compartment and a separate designated fire zone.

...

Oil storage (of Class A2 Fuel to BS EN590: 1995) shall be provided, by means of the existing Hospital bulk fuel storage system with local dedicated (1 per generator) day tanks. The day tank storage will be located within each generator room. Fire isolation valves

will be provided to each fuel oil supply line to each day tank in order to isolate the fuel oil supply should a fire condition occur in the respective generator room only.”

182. Thus the Rev 12 Fire Strategy provided for level B1 to be covered by separate zonal sprinkler systems and for the Electricity Substation to include additional compartmentation.
183. In section 8, the Rev 12 Fire Strategy included a section entitled “Atrium Design – a fire safety engineering approach”. Mr Jones accepted in cross examination that this section followed the sort of framework he would expect for a fire engineered solution. There was no equivalent section for level B1 or Plant Room 2.

Discussions over amendments to the Fire Strategy

184. In October 2007 there were discussions relating to the fire strategy report between AECOM, Lendlease, the Architect and Leeds City Council (“**LCC**”).
185. Following a meeting on 5th October 2007, Simon Vaughan (“**Mr Vaughan**”), the Lendlease Project Manager, sent an email of the same date to Nigel Brown of LCC (“**Mr Brown**”) copied to John McGrath of Lendlease (“**Mr McGrath**”), Kwan SanChan of the Architect (referred to as “**Sam**”) and Derek Middleton of AECOM (“**Mr Middleton**”), dealing with “Fire and Smoke Compartmentation”. Relevant sections of the email concerning Plant Room 2 (“**the 5 October Email**”) are as follows:

“Nigel,

Following our meeting this morning, I note below the points we discussed:

...

3. External Risers 5, 4 & 3 at B1: We agreed to install a 1hr hour fire blanket between the L0 slab and bottom steel riser. You accepted the ductwork penetrating need not be dampered. This is over and above what is drawn.

4. External Risers 2 & 1 at B1: As the space between the L0 slab and bottom riser still is used to allow air flow to the emergency generators we agreed it was unnecessary to provide separation. This conflicts with the drawn requirements for 2 hr separation.

...

7. **B1 plant room- You accepted that there is no need to provide separation between rooms within the main plant room. This has previously (sic) This conflicts with the drawn requirements. The**

perimeter of the plant room and B1 streets will provide one hour separation as per the drawings.

Derek/Sam

As some of the above is contrary to the drawings and, in the case of the generator rooms at B1, section 7.5 of the fire strategy document, when you revise the fire strategy document and drawings [please ensure] that these alterations are incorporated.”

(emphasis, and additional wording in square brackets, added)

186. In a response of the same date, Mr Middleton of AECOM said that he did not agree with “most of what was ‘agreed’ or interpreted” at the meeting. He made it clear that he wanted comments from others and then said “If these are modifications then they can be picked up in the final ‘as fitted’ fire document”.

187. In a response of 8 October 2007, Mr McGrath said this (plainly referring to the Fire Strategy):

“The document needs updating so we can issue this to the [Trust Adviser] so he has something to sign off against. I have been asking you for months to update the report. Please issue the amendments to allow PC to take place.”

188. Mr Middleton responded less than an hour later:

“The [Trust Adviser] will not sign it off I believe. He can not be given the opportunity to invoke change.

We have issued the document as and when requested so I cannot accept not issued for months.

As I commented once I get other opinions we will review but I cannot agree with some of the comments made.”

189. Mr McGrath responded, showing his frustration:

“Its not change its that your document doesn’t reflect whats on your drawings.

Thanks for being your usual helpful self it would take no time at all to modify the doc. As usual you are more interested in task avoidance. He is not “invoking change”. You obviously have no idea what is installed. Your drawings are in conflict with your fire strategy document. So which is right? You need to update the document its not such a big issue you spend more time writing these mails than it takes to alter two paragraphs!”

190. Mr Middleton disagreed with this characterisation of his actions, in an email sent shortly afterwards:

“Totally disagree with your comments. I could just amend the doc against the email as instructed but you are asking [AECOM] to advise you when we do we do it with the intent that we are protecting the scheme, it is only [Lendlease’s] view that we are in task avoidance mode. In two years time when the fan is full and no one has an audit trail, [AECOM] are your first port of call, all we are doing is trying to apply something other than a knee jerk reaction. And quick cost fix. We have your overall interests in mind!!”

191. Mr McGrath responded very briefly observing only that “You have just verified my earlier statement”. Mr Middleton brought an end to the email correspondence at shortly before 2pm on 8 October 2007 saying that “[w]e will advise what we see is the correct course of action, as and when all the details are tabled.”
192. It appears that John Hopkinson of AECOM (“**Mr Hopkinson**”) then stepped in to ease the tension. In an email sent at 4.25 pm on 8th October 2007 to, amongst others, Messrs Vaughan and Middleton, Mr Hopkinson, who had by now apparently spoken again to Mr Brown, said this:

“Team – Nigel [Brown of LCC] has agreed to resond (sic) to the points raised;

First item in the e-mail: he accepts the omission of the horizontal separation at B1/B2 He accepts this concession is a derogation and will say as much if asked.

On the other six items in the e-mail, he is willing to put a statement by each of acceptance.

I suggest you ask Nigel to respond to the 7 points, along the lines of these comments. He is very helpful.”

193. Mr Middleton thanked Mr Hopkinson later the same day and responded “We should await his written agreement. Then proceed”. The following day Mr McGrath also thanked Mr Hopkinson for his “constructive help”.
194. In an email of 16 October 2007 with the subject heading “Practical Completion Queries”, Benjamin Khan of the Trust referred to a small number of actions he had taken away from a meeting on the previous Friday to investigate. These included Fire Certification. On this subject, Mr Khan said:

“The Trust requires the completed fire strategy for the wing to be issued to them by Project Co.

The final document should include:

- any changes made since the original issue; and
- details of any derogations from FireCode on the basis that they meet the "equivalency or better" test.

Once the strategy has been received and agreed the Trust will arrange to have the document signed off by the Trust's own Fire Advisor in writing.

The Trust will then produce Risk Assessments for all operational areas in the building..."

195. In an email dated 29th October 2007 to Mr Vaughan, Mr Brown agreed to the points raised in the 5 October Email by inserting "Agreed" next to each item. Mr Vaughan forwarded Mr Brown's email to Mr Middleton and to Sam, requesting that "the fire strategy document and drawings as required" be updated.
196. Notwithstanding this request, it appears that AECOM did not make any immediate amendments in relation to the compartmentation of Plant Room 2. On 19 November 2007, Mr Vaughan emailed Mr Middleton on the subject of the Fire Strategy noting that various sections (including paragraph 7.5) had not been revised "following Nigel's confirmation that the horizontal fire shutter separating...the generator rooms in B1 plant need not be in their own 1 hr compartments" and asking when this would be revised and reissued. Mr Middleton responded on the same day asking "...why do you want 7.5 amending, **you have built the walls** at 1 hour, it was the med gas room which we derated?" (**emphasis added**). Mr Vaughan's reply, also dated 19 November 2007, said this:

"The walls to the HV/LV/Generators are not fully fire stopped due to the amount and type of penetration. So we leave no room for being picked up on, it was agreed that the perimeter of the B1 plantroom would be the line of fire separation (sic) from the corridor, therefore please amend the document."

Mr Middleton simply responded "Ok".

197. The Rev 19 Fire Strategy (LOW/E/6000/RP/001/E05) was amended after these email exchanges. It makes no substantive change to the requirement for 60 minutes fire separation around the main electrical switchgear but the wording relating to the standby generators in paragraph 7.5 changed as follows:

"The generators shall be located within the level -1 designated plant area, contained within their own room s. ~~Each generator room is a 1-hour fire compartment and a separate designated fire zone.~~ within the main plant area.

Oil storage (of Class A2 Fuel to BS EN590: 1995) shall be provided, by means of the existing Hospital bulk fuel storage system with local dedicated (1 per generator) day tanks. The day tank storage will be located within ~~each~~ the generator rooms. Fire isolation valves will be provided to each fuel oil supply line to each day tank in order to isolate the fuel oil supply should a fire condition occur in the respective generator room only”.

198. There is nothing in the Derogations Table of the Rev 19 Fire Strategy that indicates a derogation from HTM 81 in relation to compartmentation in Plant Room 2 as part of an engineering solution, much less is there any justification for the amendment.
199. The incorporation of the Electricity Substation and its individual plant areas into one compartment formed of the entirety of Plant Room 2 was shown on the Architect’s final construction issue drawing Low-A-4200-B1-501 Rev E04 dated 20 November 2007, the day after the above revision was made to the Fire Strategy.
200. In an email dated 3 December 2007, Mr Vaughan sent to Mr Brown at LCC the track changes to the Fire Strategy “since first issue”. He asked that this be copied to Capita Symonds Limited (“**Capita Symonds**”), the Independent Certifier for Project Co. The attached list of “Major Fire Strategy Changes” does not mention the change to paragraph 7.5 of the Fire Strategy.
201. In a letter dated 4 December 2007, to the Fire Inspector at Leeds Fire Safety Office, Mr Peter Aldridge (the Trust’s Fire Safety Manager) said this:

“The building is due to be taken over by the Leeds Teaching Hospitals NHS Trust on 14th December 2007. Prior to that date there are several compliances that need to be adhered to, LTH and Bovis Lend Lease identify that all issues with regard to Fire Safety are important to comply with prior to the 14th December 2007.

With regard to the issues of commissioning of the fire alarm, emergency lighting, sprinklers, fixed suppression systems and other fire safety systems these will be completed prior to the 14th and certification surrounding the commissioning and compliance will be in place. These will be verified and witnessed by an independent source.

...

The issue that the Trust and [Lendlease] would like to clarify and have further discussion on, with West Yorkshire Fire and Rescue Service are risk assessments. It is felt by myself, and this has been discussed with Bevis/VLL and Trust colleagues, that to have a full set of completed risk assessments for the premises, fully reflecting all fire safety issues is not practical until the Trust takes full occupancy of the building...”

202. Also on 4 December 2007, Capita Symonds issued its Independent Tester's Report No. 35 in which it confirmed that its visual inspections in November 2007 indicated that "generally the Works are being undertaken in accordance with the specified standards contained in the Project Agreement" and that Lendlease had "issued revision 19 of the Fire Strategy document and associated drawings to the Trust and Building Control for their approval". Paragraph 2.2 recorded that Capita Symonds were "awaiting a meeting with [AECOM] to discuss our queries on compartmentation".
203. On 13 December 2007, Mr Amoakohene of the Trust emailed Mr Galligan of Lendlease confirming that the concept of the fire strategy "is acceptable" pending two minor changes which did not relate to Plant Room 2. Mr Galligan immediately instructed AECOM to make the proposed changes as a matter of urgency.
204. On 14 December 2007, the Trust wrote to Lendlease confirming its agreement to sign off all Reviewable Design Data subject to conditions and undertakings which did not concern fire safety in Plant Room 2. Reviewable Design Data was defined in Schedule 1 to the Project Agreement as "the Design Data listed in Part 5 of Schedule 8 (Construction Matters)". Item 13 of Part 5 of Schedule 8, was the Fire Strategy but the anticipated review was not comprehensive. It included only the design details of Fire Panel locations, alarm routing, détente locations and coordination with Security Strategy.
205. Also on 14 December 2007 the Certificate of Practical Completion was issued by Capita Symonds. On 21 December 2007, LCC Building Control issued a Building Regulations Completion Certificate in relation to the Oncology Centre.
206. Pausing there, I make the following findings in light of these documents:
- (1) There does not seem to have been a coherent or structured approach to the amendment of the Fire Strategy. There is no evidence of detailed consideration of what was required and it is not clear that Mr Middleton of AECOM was in agreement with the various points that were said to have been agreed at the meeting on 5 October 2007. There is no minute of the meeting on 5 October 2007 and nothing to explain why a decision appears to have been made to remove the compartmentation within Plant Room 2 or how Mr Brown might have been persuaded to agree to this. There is no evidence as to the identity of the individuals who attended the meeting. Many of these points were accepted by Mr Jones during his cross examination.

- (2) In his email of 29 October 2007, Mr Brown of LCC plainly agreed that there was no need to provide compartmentation/separation between the individual rooms in Plant Room 2. However he did not approve any fire engineering approach and there is no evidence that (unlike the omission of the horizontal separation between B1/B2) he understood, acknowledged or agreed that this was a derogation from HTM 81. Neither he, nor Mr Vaughan are fire engineers. Furthermore, there is no evidence that LCC saw any document explaining the justification for the change – the Rev 19 Fire Strategy itself was not issued until 19 November 2007. On balance, I agree with Project Co that the 29 October 2007 email really shows an exercise in retrospective approval for construction decisions that the email exchanges indicate were in “conflict with the drawn requirements”. I note that Mr Bradley makes this very point in paragraph 6.3.1 of his report. Certainly there is no evidence that Lendlease (or AECOM) undertook design work to support the amendments to the Rev 19 Fire Strategy.
- (3) There is no evidence that the Trust was involved in any discussions about the proposed amendment to the Rev 19 Fire Strategy and no evidence that the Trust saw any document explaining the justification for such amendment or setting out a fire engineering approach. This is notwithstanding that the Trust expressly requested details of “any derogations from Fire Code” in the email of 16 October 2007.
- (4) The changes to the Fire Strategy were ultimately made on the instructions of Lendlease with a view to leaving “no room for being picked up on”, which I understand to indicate that Lendlease was seeking to ensure that the Fire Strategy reflected what was already in place (a reading of the email which is consistent with Mr Avey’s understanding as reflected in his oral evidence). AECOM appears to have accepted this, but it remains unclear whether it agreed with the underlying change to the Fire Strategy to remove the compartmentation in Plant Room 2. Indeed the 19 November email exchange between Mr Vaughan and Mr Middleton suggests that AECOM was not even clear as to precisely what had in fact been constructed on site. To my mind, this tends to give the lie to the assertion made by Mr Hickey in his closing submissions that “there will obviously have been plenty of discussions even if those are not recorded”.

- (5) The list of changes to the Fire Strategy that Mr Vaughan of Lendlease asked to be provided to Capita Symonds did not even point out the change to paragraph 7.5 of the Fire Strategy, i.e the change to the provision of compartmentation around the generators.
- (6) The letter from Mr Aldridge of 4 December 2007 does not record assessment or final approval of the Fire Strategy by the Trust (as submitted by Lendlease), but recognises instead that there are various compliance issues that need to be resolved. I infer from paragraph 2.2 of the Capita Symonds report of the same date that one such issue related to compartmentation. However, there is no evidence that this issue was ever resolved or that the planned meeting ever took place. I reject Mr Hickey's submission in opening that the 4 December 2007 letter "could not have been written without the Trust having been fully satisfied with the arrangements in Plant Room 2".
- (7) The Trust confirmed that the Fire Strategy was "acceptable" on 13 December 2007 and it signed off Reviewable Design Data on the following day. However, this sign off did not involve the Trust checking or approving the design generally, including, in particular, the compartmentation in Plant Room 2.
- (8) Neither the Trust, nor any other relevant authority, appears to have identified that there was no fire suppression system in fact installed in Plant Room 2, contrary to the requirements of the Fire Strategy. It is difficult to accept that there was a detailed review and approval process (as Lendlease suggests) in circumstances where such a glaring omission was not picked up, and I find that, in light of the available evidence, there was no such review and approval process.

Did the Rev 19 Fire Strategy meet the requirements of HTM 81?

207. It is common ground between the fire experts that the removal of the planned compartmentation in Plant Room 2 does not comply with the requirements of HTM 81. As they record in their first Joint Statement: "the removal of compartmentation within plantroom 2 would not achieve the same level of general life safety that HTM 81 would expect". The Joint Statements go on to reflect their agreement (subject to a caveat from Mr Jones that the relevant authorities had approved the Rev 19 Fire Strategy) that:

- (1) in respect of the absence of fire protection/separation to the cabling feeding the smoke extract fans, the Rev 19 Fire Strategy is inadequate;
- (2) in relation to the absence of fire protection/separation between generators, the Rev 19 Fire Strategy is inadequate;
- (3) in respect of the lack of separation of main electrical switchgear from normal dependency patient access areas, the Rev 19 Fire Strategy is inadequate;
- (4) in relation to the inadequate fire stopping to the LV Switch Room, the Rev 19 Fire Strategy is inadequate.

208. Furthermore, Mr Jones confirmed in cross examination that:

- (1) the removal of compartmentation may slightly increase the risk of power failure within the Hospital;
- (2) the removal of compartmentation has the effect of exposing the systems to the possibility or potential that a failure in one part of Plant Room 2 would “take out” the other part of Plant Room 2 (i.e. the back up system) and that this could be “quite serious”;
- (3) paragraph 5.2 of the Rev 12 Fire Strategy (which was unamended in the Rev 19 Fire Strategy) provided that the main electrical switchgear were to be contained within their own 60 minute compartment and that the as built Plant Room 2 did not achieve this.

209. It was also common ground that any deviations from HTM 81 (which could only have been justified if such deviations demonstrated and achieved a standard of safety equal to or better than that provided by HTM 81) should have been treated as requiring a fire engineering approach (see paragraph 11.3.2 of Part 3, Sub-Part C of Schedule 8 to the Project Agreement).

Was there a fire engineering approach for which justification was provided?

210. In my judgment, the discussions and communications I have identified above by reference to the available documents did not comply with the requirements of paragraph 11.3.3 of Part 3, Sub-Part C of Schedule 8 to the Project Agreement in that there was no attempt to justify the amendments as part of a fire engineering approach, let alone to explain how they achieved the necessary standard of life safety. I agree with Project Co that the requirements of paragraph 11.3.3 were plainly a matter of substance and not process. Indeed it is clear from the 16 October

2007 email from the Trust that it understood (and required) that any derogations needed expressly to be detailed.

211. I accept Mr Davis' evidence that the Rev 19 Fire Strategy does not contain or demonstrate a fire engineered approach and that it is significantly lacking in detail for a building as complex as the Oncology Centre. I also accept his evidence that "if a fire engineered solution has been adopted, it has not been correctly documented and presented within the fire strategy". The Rev 19 Fire Strategy contains no justification for the changes to the compartmentation requirements for Plant Room 2. I note that there was, in reality, little between the fire experts on this point.
212. In his report, Mr Jones could put the case no higher than to say that "it is reasonable to assume that the impact of [the fire engineered design] was fully considered at this time". He made a series of important (and, in my judgment, realistic) concessions in cross examination upon which Project Co relied in closing. These included that:
- (1) there was no explanation in the Rev 19 Fire Strategy for the change to paragraph 7.5 (which he volunteered was in any event "slightly confusing");
 - (2) he would have expected changes in the design between Rev 12 and Rev 19 Fire Strategy to be flagged clearly by the designer;
 - (3) "for the purposes of records" the Rev 19 Fire Strategy was "not adequate";
 - (4) Written records are important and he would expect to see some written record of a fire assessment being undertaken: "I would expect it to be documented somewhere";
 - (5) any reasonably competent engineer would have provided "at least some text" to explain the removal of compartmentation in Plant Room 2;
 - (6) he would want to be satisfied that the relevant fire-engineering approach had been presented to the relevant users before they gave their agreement or approval;
 - (7) he had not seen what Building Control, the Trust or the Trust Fire Officer had been told about the amendment to the Rev 19 Fire Strategy or what analysis or explanation they were given by Lendlease;
 - (8) he had not seen any fire-engineering analysis from Lendlease or its design team and he had not himself conducted any independent fire engineering analysis of the Rev 19 Fire Strategy, even though qualified to do so.
213. Mr Bradley was also asked about the circumstances in which a deviation from HTMs might be acceptable. His view was that he would expect the fire engineer to "set out

in the fire strategy how much evaluation he would have put in” for any risk and that the interface between the electrical and fire engineers was key. There is no evidence from Lendlease as to any such interface and no evaluation within the Rev 19 Fire Strategy to support the decision to remove the compartmentation.

214. I also do not consider the emails identified above to amount to justification. I accept Mr Davis’ evidence that the email of 29 October 2007 on which Lendlease relies “does not constitute justification”. Furthermore, I agree with Project Co that it is inherent within the requirements of paragraph 11.3.3 of Part 3, Sub-Part C of Schedule 8 of the Project Agreement that the identification and justification for any derogation from HTM 81, including the justification for a fire engineering approach, should be found in the Fire Strategy, a document designed to enable the end user of a facility to understand the fire safety design intent of that facility. Against that background, it would be odd and unhelpful if the fire safety design could appear in one place but its justification in quite another. The expert evidence on both sides made it clear that the expectation would be that any justification would appear in the Fire Strategy itself.
215. Lendlease has been unable to point to evidence either supporting the existence of any sort of fire engineered solution relating to the removal of compartmentation in the Electricity Substation, or supporting the proposition that any fire engineered solution was adequate. Furthermore, as Project Co points out, there is no evidence to demonstrate that any consideration was given at the time to compliance with Lendlease’s other design obligations, such as those arising under HTM 2007, HTM 2011, BS 7671 or the requirement to provide a split distribution system. The executive summary to the Fire Strategy expressly required conformance with standards referred to in HTM 81, with departures from those standards expressly identified. In an internal review dated 19 December 2019, looking at, amongst other things, the Plant Room 2 compartmentation, Lendlease appears to have appreciated that “if business continuity is to be applied then all compartment walls would need to be fire rated/protected to prevent a fire in one area affecting the rest of the systems”.
216. In this context I note also in passing that, in a claim against AECOM, Lendlease positively asserted that the removal of compartmentation around the generator switchgear was implemented only because there would not have been enough room for it within Plant Room 2 otherwise (i.e. that it was not done as part of a considered

design process). Mr Avey confirmed during his evidence that if he had considered there to be a good reason for the design change the claim against AECOM (and indeed against Lendlease) would likely not have been made.

The Lendlease Fire Strategy Defence

217. Notwithstanding all of the evidence to which I have referred, Lendlease nevertheless relies on the contention that the Rev 19 Fire Strategy was agreed and/or approved by the Trust, by Project Co (through Capita Symonds) and by LCC Building Control, such that all parties must have been content that the departures from HTM 81 were justified by the engineering solution adopted and that the Fire Strategy met the terms of the Project Agreement and D&B Contract. However, I do not consider that this case is made out on the documents or the evidence of the expert fire engineers. Furthermore I disagree with Lendlease that the very fact of the Rev 19 Fire Strategy being signed off is probative of it having been justified to the relevant authorities. I shall turn now to consider each of the relevant authorities in turn.

Approval by the Trust

218. The first point relied upon by Mr Selby in closing (and with which I agree) was that there is nothing in the Review Procedure set out in Schedule 10 to the Project Agreement that could relieve Project Co (and hence Lendlease pursuant to clause 5.1 of the D&B Contract) of its design obligations, regardless of whether the Trust in fact reviewed and accepted the Rev 19 Fire Strategy or not. Clause 15 of the D&B Contract made clear that Lendlease was at all times responsible for the design of the Works and for achieving compliance with the requirements of the D&B Contract, irrespective of any review, approval or comment made by Project Co and/or the Trust. This seems to me to render the question of approval otiose.

219. However, even if I am wrong about that, the evidence does not begin to satisfy me that the Trust approved the Rev 19 Fire Strategy in any meaningful sense.

220. It is common ground that the Trust ultimately “approved” the Rev 19 Fire Strategy, but it did so apparently on the basis of an already constructed Plant Room 2, without receiving the detail it plainly required and without any justification for the amendment in relation to compartmentation. Approval of a fire strategy that purports to be code compliant when it is not, cannot be a defence. There is no evidence of any justification or explanation for a fire engineering approach (whether

in the Rev 19 Fire Strategy or anywhere else) and considerable doubt about what was in fact agreed at the meeting on 5 October 2007 – which does not appear to have been attended by representatives of the Trust in any event. The emails in which the amendment was (briefly) discussed were not copied to the Trust.

221. I reject Mr Hickey’s submission in opening that the fact that the amendments to paragraph 7.5 of the Fire Strategy appear to reflect “what had been justified as compliant by item 7” of the 29 October 2007 email is “fatal to [Project Co’s] case on breach”. There had been no such justification.
222. Should I nevertheless draw an inference in Lendlease’s favour by reason of the absence of any witness from the Trust to deal with this issue, as Mr Hickey suggests? In my judgment, I should not. I agree with Mr Selby that the case on justification and approval of the Rev 19 Fire Strategy was a positive case raised by Lendlease in its Amended Defence. In so far as Lendlease sought to persuade the court that the amendments to the Rev 19 Fire Strategy had been explained and justified to the Trust, it is Lendlease (and not Project Co) which might reasonably have been expected to call evidence in order to establish its case.
223. In so far as Lendlease sought in its closing submissions to suggest that the burden of demonstrating that the Rev 19 Fire Strategy was not justified or accepted by the Trust as meeting its requirements had not been satisfied by Project Co, I reject such submission. Although HTM 81 provides at 1.7 that if an alternative approach is used “the responsibility is placed upon “the user” to demonstrate that the approach achieves similar fire safety objectives, I disagree with Mr Hickey that this places the onus on Project Co to demonstrate that a fire engineering approach has been adopted in the context of these proceedings. This would be contrary to the terms of the Project Agreement and D&B Contract. Furthermore, the provisions of HTM 81 at 1.7 cannot possibly remove the responsibility for the fire design from the shoulders of its designer (indeed Mr Jones accepted that responsibility for the fire engineering lies with the designer) and, in any event, this obligation in fact serves to highlight the importance of including a justification for a derogation from HTM 81 in the Fire Strategy itself. No such justification was provided.
224. The mere fact of approval by the Trust does not evidence either that justification was provided or that the contract had been complied with. I do not consider that in approving the Rev 19 Fire Strategy, the Trust was agreeing to a departure from the requirements of the D&B Contract or that it was provided with the details necessary

to enable it to provide its informed approval or agreement to any derogation from HTM 81.

225. In the circumstances, I am equally unconvinced by Lendlease's reliance in its Amended Defence upon the December 2019 Meeting, more than 12 years after Practical Completion, at which it is alleged that the Trust's then fire officer, Mr Mark Cox, "confirmed the fire strategy from Practical Completion and acknowledged that Lendlease had installed their works in accordance with the Fire Strategy document Revision 19", as recorded in an email from Mr Alistair Hendrie of Lendlease dated 10 December 2019. Even assuming this is what Mr Cox said and that the content of Mr Hendrie's email is accurate (and Mrs Berridge's evidence to the effect that she did not attend the whole meeting does not appear to me to assist one way or the other on this point), the fact that the Trust thought in 2019 that Lendlease had installed the Works in accordance with the Rev 19 Fire Strategy does not take matters any further – the Rev 19 Fire Strategy did not comply with the requirements of HTM 81 and did not set out any justification for this non-compliance or any alternative engineering strategy.
226. In any event, the Trust's understanding of the fire safety design of the Oncology Centre appears to have been erroneous, as was clear from Mr Jones' evidence about the Operational Fire Information Guide: Bexley Wing (dated 26 August 2014), which Mr Jones confirmed would be based on the Trust's understanding of the building. Mr Jones agreed that this document showed that the Trust had misunderstood (a) the compartmentation provided within Plant Room 2; (b) the protection provided to the risers; and (c) the sprinkler provision within Plant Room 2: "I think it shows they probably haven't looked at the fire strategy correctly and taken the information out of there". In my judgment, this goes a long way to explaining why, for more than 10 years after Practical Completion, the Trust made no complaint about the fire safety or dual electrical supply arrangements in Plant Room 2.

Approval by LCC

227. In so far as Lendlease relies upon the approval of LCC, there is no evidence (i) as to the basis on which LCC was content to agree to the removal of compartmentation in Plant Room 2; (ii) that it considered or investigated compliance with the terms of the

D&B Contract; or (iii) that it was in the least concerned with Lendlease's contractual obligations. I refer to the findings I have already made above.

228. Regulation 17(4) of the Building Regulations 2000 makes clear that a Completion Certificate is not conclusive evidence that the Building Regulations have been complied with and the certificate itself records that it is only certifying compliance with Building Regulations "so far as the authority has been able to ascertain". The certificate does not purport to certify compliance with the Trust's Construction Requirements, Project Co's Proposals or the Project Agreement/D&B Contract as a whole. Accordingly I reject any suggestion that there is any contractual significance to the issue of the Building Regulations Completion Certificate.
229. Mr Hickey also relied in closing upon the fact that LCC Building Control "consult" with the West Yorkshire Fire & Rescue Service. However, as Mr Jones confirmed in evidence, the Fire Service would not be in a position to approve the Fire Strategy beyond simply looking at it from the perspective of "fighting fires" – they would not consider issues such as compliance with the contract. There is, in any event, no documentary evidence whatever to support the proposition that the Rev 19 Fire Strategy was approved by the Fire Service.

Approval by the Independent Certifier – Capita Symonds

230. The reliance by Lendlease upon approval by the Independent Certifier appears to be reliance upon the issue by Capita Symonds of the Certificate of Practical Completion. However, it is clear that this does not have the contractual significance that Lendlease wish to attach to it.
231. Clauses 22.12.1 and 22.16 of the Project Agreement provide as follows:
- "22.12.1...the issue of the Certificate of Practical Completion shall, in the absence of manifest error, bad faith or fraud, be conclusive evidence for the purpose only of ascertaining the Payment Commencement Date, that the Actual Completion Date has occurred on the date stated in such Certificate..."
- 22.16 The issue of any certificate described in this clause 22 shall in no way affect the obligations of Project Co under this Agreement including in respect of any Defects."
232. Accordingly, I agree with Project Co that the issue of the Certificate of Practical Completion by Capita Symonds is irrelevant. Further, as I have already observed,

there is no evidence that the queries that Capita Symonds appear to have had about the compartmentation were ever resolved.

Conclusion on the Fire Strategy Defence

233. In my judgment, Lendlease's reliance upon its Fire Strategy Defence is misplaced. Contrary to its closing submissions, the available evidence does not begin to show that "all parties were content that the risks were minimised to an acceptable level" or that "Plant Room 2 was designed and constructed in accordance with the Trust's requirements and was a fire engineered solution that generally followed the guidance in the HTMs where practicable, and was justified to and approved by the Trust and Building Control" as Lendlease submitted in closing. There is no basis whatever for the assertion (again in closing) that where the fire strategy for Plant Room 2 diverged from HTMs "it has been based on a fire engineering solution that provides an equivalent level of fire safety protection".
234. The weight of the evidence, including that given by Lendlease's own fire expert, is overwhelmingly in the other direction.
235. In closing, Lendlease made two further main submissions by way of support for its Fire Strategy Defence.
236. First Mr Hickey made the (at first blush) attractive point that the Oncology Centre has been operated for 14 years without incident, that between (at least) 2010 and 2014 Project Co had provided annual PFI Statements of Compliance to the Trust that the Oncology Centre complied with the relevant legislation and HTMs and that a Hughes & Associates Report of 2014 did not identify any problem with the configuration of Plant Room 2. In short, Lendlease submits that over this period the Fire Strategy was regularly reviewed without any suggestion of non-compliance and that this undermines Project Co's case.
237. I reject this submission. Whilst I was initially surprised by the existence of PFI Statements of Compliance, they do not evidence that the Rev 19 Fire Strategy was justified or that it was approved or that the Rev 19 Fire Strategy was in fact compliant with the Project Agreement and D&B Contract.
238. The Statements of Compliance were provided at a time when Mrs Berridge's evidence (which I accept) is that the Defects were unknown to Project Co and to the Trust (there is no Statement of Compliance after discovery of the Defects). They were signed off by a General Manager of Project Co, not a fire engineer or anyone

qualified to opine on the adequacy of the fire safety design at the Oncology Centre, and furthermore there is no evidence available to the court as to the nature or extent of any investigations that may have been carried out prior to finalising the Statements of Compliance. At this time it would appear that Project Co was under the impression that a compliant fire engineering solution had been implemented in Plant Room 2 by reason of the Rev 19 Fire Strategy. I accept Mr Selby's submission that the Statements of Compliance are no substitute (contractually or substantively) for proper consideration of the actual fire safety and electrical engineering status of Plant Room 2.

239. I also accept Mr Davis' evidence that whilst he was astounded to see the Statements of Compliance, he had seen mistakes of this nature before and was unsurprised by them. Ultimately both fire experts agree that the Rev 19 Fire Strategy was (absent any justification or approval) inadequate, and I fail to see that the Statements of Compliance affect the position. There is no reason to suppose that just because an incident has not occurred in the first one, five or ten years after construction, it will not occur in the future. There might be a mechanical failure or mishap caused by human intervention at any time.
240. Second, Mr Hickey submitted that no explanation has been provided as to why, if Plant Room 2 was defective in the manner alleged, no remedial works have been carried out to date. I shall return to this in more detail later in this judgment. For present purposes, I say merely that I accept Mrs Berridge's evidence that the full extent of the issue was only first identified in 2018 and whilst there certainly has been a considerable delay since then, I do not consider that such delay evidences a view on the part of the Trust (or indeed Project Co) that the Proposed Remedial Works are not necessary (as Mr Hickey submits). There is nothing in the documents to which I was taken to support such a case.
241. If Lendlease had genuinely considered the Rev 19 Fire Strategy to be adequate, it could have produced an analysis in these proceedings to prove as much. However, Mr Jones (who plainly had the necessary expertise) confirmed in cross examination that he had carried out no such analysis.
242. For all the reasons I have given, I dismiss Lendlease's case that the Rev 19 Fire Strategy was an agreed and justified fire engineering solution.
243. By way of short post script, I should add that Project Co sought (for the first time at trial) to rely on the fact that the Rev 19 Fire Strategy was not a legitimate variation

in accordance with “the clause 40 variation procedure” as set forth in Project Co’s Proposals. This was suggested as a “complete answer” to Lendlease’s case. I need not consider this issue in light of my conclusions as set out above, but I observe that even by the time of closing, the relevant clause 40 variation procedure was not in the bundle and, absent a pleading on this point, I would not have been prepared to find in Project Co’s favour on it.

Issue 3: Did the Fire Strategy adopt a fire engineering approach within the meaning of paragraph 11.3 of Part 3, Sub-Part D of Schedule 8 to the Project Agreement?

244. In my judgment the Rev 19 Fire Strategy did not adopt a fire engineering approach, for all the reasons I have already identified.

Issue 4: Did the Fire Strategy provide a standard of fire safety equal to or better than that provided for in HTM 81?

245. It is clear from the extracts from the expert evidence to which I have already referred in the context of Issues 1 and 2 that the Rev 19 Fire Strategy did not provide a standard of fire safety equal to or better than that provided for in HTM 81.

246. In this regard, Lendlease was in breach of the Project Agreement and the D&B Contract.

Issues 5 and 6: Did Lendlease carry out and complete the Works under the terms of the D&B Contract in accordance with the Fire Strategy? If the Works were completed in accordance with the Fire Strategy, can it be said that nonetheless Lendlease was in breach of contract to Project Co and, if so, on what basis?

247. Save for its admitted breaches in respect of a fire suppression system and a couple of cables, Lendlease does appear to have completed the works in accordance with the terms of the Rev 19 Fire Strategy (perhaps unsurprisingly given that the Rev 19 Fire Strategy appears to have been amended to reflect the as built conditions in Plant Room 2). The fire experts agree in the second Joint Statement that the Rev 19 Fire Strategy was complied with.

248. However, in circumstances where the Rev 19 Fire Strategy was not compliant with the terms of the Project Agreement and the D&B Contract, this is of no assistance to Lendlease. Furthermore, the fact that it is now finally accepted by Lendlease that there was a breach in respect of the failure to install a fire suppression system, appears to me to undermine its case that approval of the Rev 19 Fire Strategy can amount to an absolute defence.

249. Further and in any event, as I have already explained, the Fire Strategy is not by any means the last word on Lendlease's obligations under the Applicable Standards. I shall need to consider these obligations in the context of considering the individual Defects.

DEFECTS 1, 1A, 1B, 1C, 3, 4, 5, 6, 7, 8 AND 9

Issue 7: Do the Defects constitute breaches of contract by Lendlease?

250. In circumstances where Lendlease ran its Fire Strategy Defence at trial almost to the exclusion of all else, it spent little time considering each of the alleged Defects in any detail, whether in its opening or closing submissions. This makes it difficult to identify the arguments on which it relies in respect of each Defect (in so far as there are any over and above the Fire Strategy Defence), and it seems to me that I must therefore focus on Appendix 1 to its Amended Defence to ensure that I have not omitted consideration of any available (and pleaded) defence. I agree with the submission made by Mr Selby in closing that Lendlease has failed to grapple with its non-compliance with the Applicable Standards.

251. Doing the best I can, however, I intend to go through each of the live Defects in order to consider the allegations made, the defence advanced by Lendlease and the evidence before making appropriate findings. It is worth noting that (with the exception of Defects 5 and 6, which I shall deal with out of order at the end) the Defects address different aspects of the same alleged fundamental failings within Plant Room 2 in respect of fire and electrical safety. Accordingly, whilst they each involve breaches of different and specific provisions of the Applicable Standards, there is also considerable overlap between the Defects and the Applicable Standards that they engage.

252. In its Amended Particulars of Claim, Project Co alleges that the breaches of Applicable Standards on which it relies put Lendlease in breach of clauses 5.1, 5.2.1, 5.2.2, 5.2.3, 12.1.1, 12.1.3, 12.1.5, 12.1.6, 13.1.1, 13.2.1 and 13.2.2 of the D&B Contract, all of which are set out above.

Defects 1 and 1C

253. I take these Defects together. Mr Davis confirmed in his report that Defects 1 and 1C raise identical issues, a proposition with which Mr Jones agreed. I have set out

the nature of these Defects in paragraph 31 above. However, in broad terms they involve lack of fire separation in Plant Room 2. Defect 1 focusses on the fact that the intermediate walls in Plant Room 2 are not of fire resisting construction or adequately fire stopped. Defect 1C is concerned with the lack of compartmentation around individual generators.

254. Project Co's Scott Schedule alleges that these Defects involve breach of the following key Applicable Standards:

(1) Requirements B2 and B3 of the Building Regulations which provide that:

“B2 .—(1) To inhibit the spread of fire within the building, the internal linings shall—: (a) adequately resist the spread of flame over their surfaces...

B3 (3) Where reasonably necessary to inhibit the spread of fire within the building, measures shall be taken, to an extent appropriate to the size and intended use of the building, comprising either or both of the following:

(a) sub-division of the building with fire-resisting construction...”

(2) HTM 2007, paragraph 14.5 Low Voltage Switchrooms, ‘Walls’:

"Walls and doors should be constructed to fire regulations and standard statutory requirements”

(3) HTM 2007, paragraph 13.12, which provides that for a high voltage substation:

“The minimum construction requirements are: a. walls and fire-resisting partitions forming the chamber must comply with statutory Building Regulations or equivalent fire-resisting steel fabricated modular construction”.

(4) HTM 2011, paragraph 4.17:

“Normal supply transformers, switchgear and cables should not be in close proximity to an emergency generator set unless adequate segregation and fire barriers are provided.”

(5) HTM 2011, paragraph 4.124:

"The engine room and any associated room used for oil storage should be of fire-resisting construction”.

(6) HTM 2011, paragraph 4.140:

"Where oil or gas engines are used, fire extinguishing protectron (sic) must be provided over all fuel storage tanks and engines".

(7) Rev 19 Fire Strategy, paragraph 7.5:

“generators should be located within the Level -1 designated plant area, contained within their own room within the main plant area”

255. In so far as these Applicable Standards require the exercise of judgment in designing Plant Room 2, it appears to be common ground that the starting point (in so far as life safety is concerned) must be the guidance in HTM 81, hence the considerable focus by the parties on HTM 81 during the course of the trial.
256. In Appendix 1 to its Amended Defence, Lendlease responded to these allegations primarily by reference to its Fire Strategy Defence. By way of illustration, I set out an extract from paragraph 2 of Appendix 1:

“The plant room was designed as an engineered solution in accordance with a Fire Strategy approved by all parties and accepted as compliant with the same. The allegations now made take no cognisance of the fact that the solution was in accordance with recommendations and approval of the relevant fire safety managers. Project Co is wrong to start from the assumption that HTMs (which were guides) were applicable given that there was an engineered solution where deviation from the guidance was permitted and justified”.

257. In light of its Fire Strategy Defence, it was Lendlease’s case that the requirements of the Building Regulations 2000, Part B – Fire Safety, could be demonstrated as achieved without compartmentation/fire separation. In accordance with the Rev 19 Fire Strategy and associated Architect’s drawings, Lendlease contends that Plant Room 2 is one compartment of less than 2000 m², such that there is no need to have fire rated internal walls. Intermediate walls within Plant Room 2 are made of “fire resisting material” as required by B2 of the Building Regulations (which was accepted by Project Co in its Reply) and that is sufficient.
258. As I understand it from the pleading, this case depended upon the assertion that the power requirements for non-fire life safety equipment and systems was not a consideration in the context of the fire strategy. It was for this reason that Lendlease’s expert evidence did not address in any detail the significance of the absence of fire separation between the primary and secondary supply plant within Plant Room 2.

259. Lendlease also contended that Project Co had “advised the Trust that they would only have fire detection provision when asked what suppression systems were to be provided”.
260. In my judgment, Defects 1 and 1C are both made out on the evidence and I accept that there have been breaches of Applicable Standards and thus breaches of the various provisions of the D&B Contract to which I have referred above.
261. My main reasons (drawn from a reading of all of the evidence but always bearing in mind that it would be impractical and disproportionate to address in detail all of the evidence given by the experts) are as follows:
- (1) It is common ground that the original requirement in the Rev 12 Fire Strategy for compartmentation throughout Plant Room 2 was changed by the Rev 19 Fire Strategy. It is also common ground that there is accordingly no fire separation between the primary and secondary power supplies within Plant Room 2 – the generators sit within the same compartment as the remainder of Plant Room 2, alongside 3 diesel tanks containing approximately 2000 litres each of diesel oil.
 - (2) I accept Mr Davis’ evidence that with inadequate fire separation (compartmentation) between the primary and secondary supplies, it is likely that a fire caused by any electrical plant within any part of the electrical supply area of Plant Room 2 will severely damage the components of both electrical supplies and that this is likely to render both power supplies inoperable. In cross examination, Mr Davis elaborated on these risks, including the potential for the transfer of hot gases from one area to another and the risk of ignition of equipment in rooms adjacent to any fire by reason of the heat and explosions caused by hot gases. Accordingly, I accept Mr Davis’ evidence that the lack of fire separation renders the design of Plant Room 2 of a lower standard than that required by HTM 81, HTM 2007 and HTM 2011.
 - (3) This did not appear to me to be under any serious challenge from Lendlease’s experts. In their combined 60 years of experience, neither Mr Bradley, nor Mr O’Mahoney had ever seen or designed a hospital without segregating the primary power supply from the secondary power supply. Mr Bradley accepts that the agreed fire strategy “means that there is a loss of resilience that may affect ‘business continuity’”. In cross examination he conceded that a fire in

one part of the Plant Room could take out the whole of the power supply to the Oncology Centre, a concession which is entirely consistent with the acknowledgement by Mr Bekesi in an email dated 31 May 2018, that a fire taking out both the primary and secondary supplies in Plant Room 2 “could become a reality”.

- (4) I do not consider that the existence of the UPS affects this conclusion – the purpose of the UPS is to fill the gaps in supply when there is a switch from mains to generator power (as Mr Jones accepted in his evidence). Its purpose is not to act as a substitute for transformers and/or generators and it does not, in any event, serve the entirety of the Oncology Centre.
- (5) I accept Mr O’Mahoney’s evidence that the guidance in HTMs 2007 and 2011 applies to the design of a dual unified system and that segregation should have been installed by Lendlease between the primary and secondary systems. Again this did not appear to me to be seriously challenged. I shall return to the design of a dual unified system in connection with Defect 9 later in this judgment.
- (6) Thus it was common ground in closing that (subject only to the Fire Strategy Defence), Plant Room 2 does not comply with the requirements of HTM 2011 paragraph 4.17 because there is no segregation between (a) the transformers plus their associated switchgear cables and (b) the generators. Mr Bradley accepted in cross examination that HTM 2011 required generators and tanks to be in separate fire compartments and that this was normally seen in hospitals – albeit this is not the arrangement in Plant Room 2. HTM 2007 says at paragraph 1.5 that “Every effort must be made to reduce the probability of equipment failure due to loss of power”. On the evidence, that did not occur in Plant Room 2.
- (7) Mr Bradley also accepted that under HTM 2011, generator rooms should be of fire resisting construction subject to anything to the contrary in the Rev 19 Fire Strategy. No such provision has been made in Plant Room 2 (where intermediate walls are not fire resistant owing to their incomplete construction and lack of fire stopping), contrary to paragraph 4.124 of HTM 2011. Further I accept that the absence of fire separation between each of the generators and the remainder of Plant Room 2 was also in breach of paragraph 7.5 of the Rev 19 Fire Strategy.

- (8) I accept Mr Davis' evidence that the enclosures within Plant Room 2 which house the HV and LV equipment are not of fire resisting construction and contain defective fire stopping, such that there is a breach of HTM 2007, paragraph 14.5.
- (9) Mr Bradley accepts that paragraph 4.140 of HTM 2011 requires fire suppression over generators in addition to segregation. However, it is common ground that no fire suppression system was installed in Plant Room 2, contrary to the requirements of paragraph 7.2 of the Rev 19 Fire Strategy, the Project Agreement and HTM 2011, paragraph 4.140. Lendlease concedes that this is a defect which must be rectified. Both fire experts agree that the provision of automatic fire detection is not a viable replacement for a suppression system.
- (10) Whilst Lendlease was plainly not required to warrant or ensure protection from fire (and HTM 81 recognises that it is not possible to eliminate the risk of fire), the risk at the Oncology Centre was not sufficiently minimised or controlled. I reject Lendlease's submission that this risk was in practice "extremely low"; as I have already said, Lendlease has carried out no analysis in support of such a proposition, notwithstanding that it would have been relatively simple to instruct Mr Jones to undertake such an analysis. Lendlease acknowledges that there was a potential business continuity risk, which, for reasons I have explained and in the sense identified, was a risk which Lendlease had a contractual obligation to minimise.
- (11) Both fire experts agree in the Joint Statement that the 120 minutes separation provided between the main electrical switchgear in Plant Room 2 is not compliant with the 60 minutes separation (plus suppression) required by HTM 81.
- (12) Mr Jones accepted that the aim of HTM 81 (as set out in paragraph 1.15) is to reduce the risk of fire to patients, visitors and staff as far as is reasonably practicable. Mr Bradley confirmed that this was the aim of all HTMs. Mr Jones and Mr Davis agree that Plant Room 2, as constructed, does not meet the recommendations of HTM 81 and that (even though HTM 81 does not specifically require the provision of compartmentation to enclose plant and/or electrical services) in this case the removal of the

compartmentation “would not achieve the same level of general life safety that HTM 81 would expect”. Similarly, Mr Jones accepted in his evidence that the removal of compartmentation within Plant Room 2 did not reduce the risk of fire as far as reasonably practicable.

(13) Mr Jones also accepted that the HV/LV switchgear, the generator switchgear and the generator rooms were places of special fire hazard and that he could see an interpretation of paragraph 9.12 and Table A1 of Approved Document B to the Building Regulations 2000 that required such equipment to be housed in individual enclosures. His evidence was, however, that ultimately whether or not the lack of compartmentation within Plant Room 2 was compliant came down to the evidence of the experts in electrical engineering. I have dealt with that above, and in my judgment their evidence is clear that the lack of compartmentation was not compliant with HTM 2007 and 2011.

(14) I accept Mr O’Mahoney’s evidence that he has seen no fire engineered solution to meet the requirement in HTM 81 at clause 5.69 to the effect that essential and non-essential electrical circuits are normally segregated but that “where this is not possible, essential services cables are wired in fire resistant cable”. Mr Davis’ evidence was to the same effect. Mr Bradley accepted that the cables were not generally fire rated. He also said that in the absence of anything else to the contrary in the Rev 19 Fire Strategy he would expect there to be adequate segregation and fire barriers between the generator set on the one hand and the normal/transformer supply on the other. This was not provided.

(15) In all the circumstances set out above, the design of Plant Room 2 (which failed to comply with the requirements of HTM 81, 2007 and 2011) did not comply with Requirements B2 and B3 of the Building Regulations.

(16) As I have already found, there is no evidence of any fire engineering justification that would explain these numerous failures to comply with the Applicable Standards.

Defects 1A and 1B

262. These Defects concern the lack of separation between cabling in Plant Room 2 feeding (i) the fire-fighting lift (Defect 1A) and (ii) the smoke extract system (Defect

1B). There seems to be no dispute that the principles underlying both Defects are the same.

263. Project Co's Scott Schedule alleges that these Defects involve breaches of numerous Applicable Standards. For present purposes, however, I need only focus on the key standards, namely BS 5588 Part 5 (fire-fighting lifts) and BS 5588 Part 7 (smoke extract). Relevant provisions are as follows:

(1) BS 5588, Part 5, paragraph 16.1-16.2:

“16.1 Both the primary and secondary sources of power to the firefighting shaft need to be sufficiently protected against fire and water damage, **and also to be separated from each other, so that a failure in cables or equipment, either by mechanical breakdown or damage by fire, in any one system, does not affect the other supply.** Protection against fire may be achieved through choice of cable, choice of route (for example through protected areas, or external to the building) or by the provision of additional protection.”;

16.2 “Any electrical substation, distribution board, generator, hydraulic pump or other apparatus which supplies or transmits power to the firefighting lift installation, or any equipment associated with the firefighting shaft (e.g. pressurization fans, pumps for fire mains, etc.) should be protected from the action of fire in the building for a period not less than that specified for the enclosing structure of the firefighting shaft” (in this case, 120 minutes).

(emphasis added).

(2) BS 5588, Part 7, paragraph 19.1-19.3:

“19.1 ‘Electrical Power Supply, All electrical supplies to life safety and fire protection installations need to be separated from other circuits at the point of entry into the building, so that the failure of other equipment does not render the installations inoperative. Since it is not possible to determine where a fire may start, all power supplies and their associated control equipment back to the supply intake position should be regarded as being within the hazard/risk area. Therefore great care needs to be taken in the design to ensure power is available at all times. Consideration also needs to be given not only to routing of cables, but to positions of terminations, circuit protection facilities and control panels, to ensure that these are also provided with adequate protection from the effects of fire”;

19.2 Protected circuits for the operation of equipment in the event of fire’ Wiring systems for the supply of electrical equipment required to operate in the event of fire need to be

of a type, or installed in a manner, such that, in the event of fire anywhere in the building, the circuits will continue to operate and the cables will maintain circuit integrity;

19.3 Primary and secondary power supplies' ...The secondary power system needs to be designed to operate safely in the event of fire.”

264. In Appendix 1 to its Amended Defence, and dealing first with Defect 1A, Lendlease once again relies upon its Fire Strategy Defence and it asserts that the cables are 120 minute fire rated and thus adequately protected against the risk of fire. Its primary defence appears to be that BS 7671 states that safety services “may” be required to operate at all material times and that therefore, “if it is accepted” that the fire-fighting lift would not be required to operate in the event of a fire in Plant Room 2, “there would be no requirement for primary and standby cabling to be separately or diversely routed here”.
265. As for Defect 1B, again Lendlease relies upon its Fire Strategy Defence and it asserts that “it is not expected that the smoke extract system in the atrium would be required to operate in the event of a fire in Plant Room 2” and that compartmentation separating Plant Room 2 and adjacent sprinklered areas would be sufficient adequately to mitigate the risk of fire spread beyond Plant Room 2.
266. In my judgment Defects 1A and 1B are both made out on the evidence and I accept that there have been breaches of Applicable Standards and thus breaches of the various provisions of the D&B Contract to which I have referred above.
267. My main reasons (which do not attempt to address each and every breach of the Applicable Standards) are as follows:
- (1) It is common ground that the primary and secondary cables feeding the fire-fighting lift and the smoke extract panels are not segregated or diversely routed, and run through the same fire compartment – i.e. Plant Room 2.
 - (2) It is also common ground between the electrical engineering experts that a fire in the Plant Room 2 area could result in loss of both the primary and secondary supply (such that cables feeding the fire-fighting lift and smoke extract panels would be “taken out”), albeit that the experts agree that a fire suppression system would prevent fire developing and spreading – a point to which I shall return later.

- (3) It is agreed by the experts that the cables feeding the smoke control panel from the switchboards are not fire rated (whereas the cables from the panel to the smoke extract fans are fire rated).
- (4) Mr O'Mahoney's evidence, which I accept, was that whether or not the fire-fighting lift would be used in the event of a fire in Plant Room 2, BS 5588 Part 5 required that the lift should be capable of operating within a fire.
- (5) Mr Bradley accepted that (subject to the Fire Strategy Defence) BS 5588 Part 5 required both the primary and secondary power supplies to the fire-fighting lift to be separated and for the cables to be protected. He confirmed that BS 5588 Part 7 dealing with smoke extraction, included the same requirements. He therefore did not dispute that BS 5588 Parts 5 and 7 apply, or (therefore) that the smoke extraction system is a life safety and fire protection installation within the meaning of BS 5588, Part 7.
- (6) The fact that the cables feeding the fire-fighting lift (and some of the cables feeding the fire extraction system) are fire rated (being cable type FP400 and thus compliant with BS 7671) does not assist Lendlease, because they were required by BS 5588 to be both protected (i.e. fire rated) and separated from one another.
- (7) Mr Bradley confirmed that he had seen nothing in the Rev 19 Fire Strategy that discussed BS 5588 and indeed there is nothing in the Rev 19 Fire Strategy that explains the non-compliance with BS 5588, Parts 5 or 7.
- (8) I accept that 120 minute protection has not been provided for the transformers (the primary supply) and the generators (the secondary supply) as required by BS 5588, Part 5, paragraph 16.2. Lendlease has not suggested to the contrary.
- (9) In the circumstances, there was a breach of BS 5588, Parts 5 and 7 in the construction of Plant Room 2.
- (10) I reject Lendlease's argument that the fire-fighting lift and the smoke extract system would not be required to operate in the event of a fire, which appears to me to be fallacious, not least because (i) it ignores the practicalities of fire-fighting, as described by Mr Davis in his report, a description which I accept in circumstances where Mr Davis has experience as a firefighter and worked for the Kent Fire and Rescue Service; and (ii) it ignores the clear intent of section 6.8.4 of the Rev 19 Fire Strategy – certainly there is nothing

in the Rev 19 Fire Strategy to support Lendlease's defence. I accept Mr Davis' evidence that there is a need to consider the real likelihood that in the event of a fire in Plant Room 2, the lift will be required to be used to evacuate other parts of the building and that the fire service should be able to expect all firefighting facilities to be available and in operation during an incident. Lendlease had no real answer to these points at trial.

(11) Mr Jones' evidence in his report went no further than to say that "**if it is accepted** that fire-fighting lifts would not be required to operate in the event of a fire" and assuming that "**it is not expected** that the smoke extract system in the atrium and basements would be required to operate in the event of a fire in Plant Room 2" (**emphasis added**) then there would be no requirement for primary and secondary cabling to be separately or diversely routed. However, the Rev 19 Fire Strategy contains nothing to support such assumptions.

(12) Furthermore, Lendlease's reliance upon BS 7671 is misplaced. That standard (at 560.5.1) appears to make clear that safety services may be required to operate at all and any time because a fire may occur at any time.

(13) I accept Mr Davis' evidence that Lendlease has not demonstrated an equivalent level of safety with the requirements of HTM 81.

Defect 3

268. As articulated and advanced at trial, this Defect concerned the (now admitted) failure on the part of Lendlease to provide a fire suppression system, contrary to the requirements of the Rev 19 Fire Strategy and the Applicable Standards. Although the Scott Schedule also referred to an issue in relation to separation from normal dependency patient access areas, Mr Davis confirmed in his report that the allegations in Defect 3 were "reflective of the lack of fire suppression to the switchgear room and are not concerned with fire stopping in the compartment floor above". Project Co's opening submissions identified that the only remaining dispute between the parties on Defect 3 was the type of suppression system to be installed as part of the Proposed Remedial Works.

269. Given that Lendlease now concedes this defect, I find that Defect 3 is made out and that there have been breaches of Applicable Standards and thus breaches of the

various provisions of the D&B Contract to which I have referred above. I rely in particular upon the following:

- (1) It is common ground that a fire suppression/sprinkler system has not been installed in Plant Room 2.
- (2) It is now admitted by Lendlease in its Amended Defence and in its submissions at trial that a fire suppression system should have been installed and that the failure so to do was a breach of contract.
- (3) Mr Jones accepted in the Joint Statement that the absence of a fire suppression system was in breach of Project Co's Proposals as set out in the Project Agreement (and relied upon by Project Co in its Scott Schedule). Indeed he accepted that the D&B Contract required a gaseous system over the HV/LV areas of Plant Room 2.
- (4) Mr Jones also accepted in cross examination that there was, in addition, a failure to comply with HTM 81 (which requires that rooms housing main electrical switchgear are to be separated from 'normal dependency' patient access by means of 60 minute fire resisting compartment construction and provided with automatic fire suppression).
- (5) There was also a clear failure to comply with the express requirements of the Rev 19 Fire Strategy, as more particularly referred to above.

Defect 4

270. Defect 4 concerns the absence of fire protection to the base of the two service risers running from Plant Room 2 up the external wall of the Oncology Centre.
271. Project Co's Scott Schedule alleges a failure to comply with paragraph 6.6.4 of the Rev 19 Fire Strategy which identifies a fire rating of 120 minutes for "vertical connections – stairs, lifts and service risers". This requirement is explained in paragraph 6.6.3 "Vertical Connections:

"With compartment floors, vertical connections become 'protected shafts'. Table A2 in HTM 81 calls for a 1 hour standard for protected shafts, but para 6.17 seeks the same standard as the compartment floor, in this building, 2 hours. It has been agreed to adopt a 2 hour standard. Lobbies should be to the same standard, with their access doors both FD30S – HTM 81, Table B1, Appendix B. The higher FD60S door access standard sought in BS5588: Pt 5 is provided around the firefighting shaft of stair 4, on levels 6 to 8 only".

272. Project Co contends that the service risers “constitute or should be treated as” protected shafts and therefore should have been provided with 120 minutes of fire resistance. Project Co says this is consistent with the guidance in HTM 81 at 6.17 to the effect that “openings in floors for...pipes and ducts...should be enclosed in a protected shaft which has the same period of resistance...as the compartment floor” (i.e. in this case, 120 minutes as is clear from paragraphs 6.6.1 and 6.6.3 of the Rev 19 Fire Strategy).
273. Although Project Co also complain in the Scott Schedule that the service risers as built are not separated from each floor level within the building (including between the ground floor and Plant Room 2), the complaint on which it focused at trial was that the ductwork has been routed through the transformer rooms and into the service risers without any fire protection.
274. Lendlease denies this defect and maintains that a fire engineered approach was adopted. In Appendix 1 to its Amended Defence it pleads that:

“The approved Fire Strategy states that the mechanical risers to the outside of the building are not intended to be enclosed in fire resisting construction (see section 6.7 of that report). 120 minute fire resisting construction was required to be provided between the mechanical riser and main hospital building on the upper floors. This is also indicated on the fire strategy drawings. Fire stopping is therefore not required where services connect between the plant room at level -1 and the mechanical riser”.

275. Paragraph 6.7 of the Rev 19 Fire Strategy appears to qualify paragraphs 6.6.3 and 6.6.4, on which Project Co relies. It provides that:

“Risers are separated from the adjacent accommodation by 2-hour construction. Their fire-rating has been taken into account in establishing the unprotected areas to this elevation. The unprotected area associated with these risers is the subject of this Section.

...

Since the risers are not within the accommodation, and therefore outside the compartment floors, they do not traverse the floors in the traditional sense of ‘protected shafts’. The risers themselves are not therefore ‘protected shafts’, and as such, need not be fire-rated by default as elements of structure.

The proposal is for 100% unprotected area to these risers since the content of the risers is largely non-combustible and the BRE document used above is not able to discern the benefits of such a low fire load. It only distinguishes broadly, between purpose groups. This approach has been accepted by the approving authorities and the risers require no fire-rating

subject to their content remaining largely non-combustible. Any change in this condition would be the subject of a future risk assessment.”

276. The fire experts agree that the Rev 19 Fire Strategy “provided a specific requirement to provide 120 minutes fire resistance from the plant area to the base of the riser”. Indeed, contrary to Lendlease’s pleaded case, the Architect’s final construction drawing LOW/A/4200/B1/501 for Level -1, Rev E 04 dated 20 November 2007 supports this requirement, showing the base of the external risers at Plant Room 2 in green, and recording in the legend that green indicated “120 min enclosure with 60 min doors (unless noted otherwise)”.
277. The outside walls of the risers are non-fire resisting and the external wall of the Oncology Centre is provided as 120 minutes fire resisting. However, the key issue here is that the ventilation louvres in Plant Room 2 which sit at the base of the external risers (which are themselves open, subject only to a floor grate) were not fire protected (contrary to the specific requirement identified above) such that a fire could enter the risers unimpeded and spread through them via 60 minute fire resisting doors to the upper floors.
278. Lendlease relies upon Mr Brown’s email of 29 October 2007 to Mr Vaughan (set out in full above) as approving an alternative arrangement. For ease of reference, the paragraph in that email with which he “Agreed” said this:
- “External risers 2 and 1 at B1: As the space between the L0 slab and bottom riser steel is used to allow air flow to the emergency generators we agreed it was unnecessary to provide separation. This conflicts with the drawn requirements for 2 hr separation”.
279. It is worth observing that notwithstanding the content of the 29 October 2007 email, the drawing attached to the Rev 19 Fire Strategy continued to show the requirement for 120 min fire protection at the base of the risers (as was confirmed by Mr Jones in his evidence). However, this is not what has been constructed on site. At best, this evidences a failure adequately to attend to the detail of the Rev 19 Fire Strategy following the agreement by Mr Brown on 29 October 2007. Lendlease has provided no evidence to explain the inconsistency between the agreement on which it now seeks to rely and the Architect’s drawing.
280. In my judgment, Defect 4 is made out on the evidence and I accept that there is a breach of the Rev 19 Fire Strategy and thus breaches of the various provisions of the D&B Contract to which I have referred above.

281. My main reasons are as follows:

- (1) As I have said, it is common ground that the Rev 19 Fire Strategy required 120 minutes resistance from the plant area to the base of the riser. It is also common ground that this was not provided. Mr Davis' evidence, which does not appear to be in dispute, is that "usually, where a riser shaft is provided, protection to adjoining floors will be provided by a fire resisting door at the floor of origin". This means that for a fire successfully to spread via a riser it would have to enter the riser through a 60 minute fire-resisting door (so bypassing the 120 minute compartment floor) and exit the riser at another floor through another 60 minute fire resistance door – thus giving 120 minutes fire resistance.
- (2) Mr Jones did not dispute in cross examination that paragraph 6.6.3 of the Rev 19 Fire Strategy provided for vertical connections to become 'protected shafts' and that this had not been provided.
- (3) Mr Davis' view is that in circumstances where the base of the riser is unprotected and sits above a non-fire resisting louvre, a fire spreading via the riser "would need only to breach one door, the 60 minute fire doors that have been provided at the exits of the risers" and that accordingly "only 60 minutes fire resistance has been provided, not 120 minutes". Mr Jones agreed with this in his evidence, confirming that any fire in Plant Room 2 would have a free passage up the risers and would only be stopped by a 60 minute fire door on the floors above.
- (4) Whilst the final two paragraphs of 6.7 of the Rev 19 Fire Strategy appear to provide an explanation for a deviation from the requirement for 120 mins fire separation (which, according to Mr Jones, "any fire engineer would understand"), the fact that the attached Architect's drawing continues to show 120 mins separation obviously creates ambiguity.
- (5) Having regard to the Architect's drawing alone, there is plainly a failure to comply with the Rev 19 Fire Strategy. There is no explanation from Lendlease as to why (given the instruction in the email from Mr Vaughan of 29 October 2007 to representatives of AECOM and the Architect to "update the fire strategy document and drawings as required") the drawing nevertheless continued to show the requirement for 120 mins fire separation. One explanation could be that, in fact, Lendlease changed its mind following

the 29 October 2007 email from Mr Brown, recognising the importance of maintaining the 120 mins fire protection (even though this was not in fact provided).

- (6) Mr Jones contended in his report that the requirement for 120 min separation on the drawing might be an error, relying on the final two paragraphs of 6.7 of the Rev 19 Fire Strategy. However, in the absence of any evidence from Lendlease it is impossible to say one way or the other.
- (7) Furthermore Mr Jones had not carried out any analysis as to whether it was appropriate to do away with the 120 mins requirement in relation to the risers, or whether the explanation provided in paragraph 6.7 of the Rev 19 Fire Strategy could be justified on the basis that it provided a standard equal to or better than HTM 81.
- (8) In all the circumstances, I accept Mr Davis' evidence that whilst it could theoretically be demonstrated that the arrangement adopted by Lendlease achieves an equivalent level of safety to HTM 81, no such analysis has been provided in the Rev 19 Fire Strategy other than at paragraph 6.7 and this paragraph is "wholly inadequate" owing to the fact that it does not provide the required level of detail or consideration that he would expect. I do not regard Mr Jones' evidence that any fire engineer would understand "the top sentence" to undermine this conclusion. Furthermore, it seems to me that the inconsistency between paragraph 6.7 and the Architect's drawing attached to the Rev 19 Fire Strategy only serves to support a conclusion of inadequacy – I do not see how any fire engineer could resolve this inconsistency.
- (9) Accordingly I accept that in the circumstances, as Mr Davis says, an equivalent level of safety to HTM 81 has not been demonstrated.

Defect 7

282. Defect 7 concerns the defective fire stopping of ductwork within the Electrical Substation, which runs from the Air Handling Units through to the risers serving the Oncology Centre generally. This engages essentially the same issues as Defects 1 and 4.
283. It is common ground that no fire stopping has been provided to the ductwork leading from the Air Handling Units to the risers.

284. Project Co's Scott Schedule identifies breaches of Requirements B2 and B3 of the Building Regulations 2000, together with a failure to comply with Regulation 7 of the Building Regulations (failure to apply fire stopping in a workmanlike manner) and paragraph 13.12 of HTM 2007.
285. Appendix 1 to the Amended Defence denies this allegation, repeating the Fire Strategy Defence and referring to the same points made in defence of Defect 4, without apparently appreciating that this allegation is not concerned with the risers but with the ductwork in Plant Room 2. Mr Jones makes a similar error in his report.
286. However, in light of concessions made by Mr Jones in his evidence I find that Defect 7 is made out on the evidence and I accept that there is a breach of the Rev 19 Fire Strategy and thus breaches of the various provisions of the D&B Contract to which I have referred above:
- (1) Mr Jones accepted in cross examination that the only compartment wall that he had considered in his report was the external wall of Plant Room 2; and
 - (2) Further, he accepted that if greater compartmentation should have been provided by Lendlease, there would need to be dampers and fire-rated ducting or the ductwork would need to be encased in some form of fire-rated construction where it penetrated the internal walls of the Electricity Substation.
287. For reasons I have already addressed, I consider that adequate fire compartmentation was not provided in Plant Room 2.

Defect 8

288. Defect 8 concerns the lack of fire stopping to the electrical cable penetrations through the intermediate walls in Plant Room 2.
289. Project Co's Scott Schedule identifies that this was in breach of B3(3) of the Building Regulations 2000 (set out at paragraph 254(1) above) and also of HTM 2007, paragraph 11.86:
- “Fire barriers and penetration seals must be provided for all cable installations entering/leaving switchrooms and plant cubicles where gland plate sealing is not provided”.
290. Appendix 1 to Lendlease's Amended Defence merely repeats its defence to Defect 1 (including its Fire Strategy Defence) and asserts that “The locations of the alleged

defects are not adequately particularised". It goes on to say that if this issue had needed to be addressed, the 2016/2017 remedial works would have done so.

291. In my judgment Defect 8 is made out on the evidence and I accept that there is a breach of the Applicable Standards and thus breaches of the various provisions of the D&B Contract to which I have referred above:

(1) It appears to be common ground that there was no fire stopping to electrical cable penetrations through intermediate walls. The suggestion that there was a lack of particularisation in relation to the location of these defects was not maintained at trial.

(2) Mr Jones confirmed in cross examination that, as with Defect 7, if additional compartmentation should have been provided by Lendlease, then there would need to be some form of fire protection provided at penetrations in the internal intermediate walls of the Electricity Substation.

(3) I have found that adequate compartmentation was not provided.

(4) I do not consider that the fact that this defect could have been addressed in 2016/17 is relevant to the question of whether it exists.

Defect 9

292. Defect 9 concerns the absence of separation or segregation between essential and non-essential cables as they run from Plant Room 2 throughout the Oncology Centre. It is alleged that all cables have been installed as non-essential cables without segregation and that the cables installed are not fire resisting cables.

293. Project Co's Scott Schedule alleges a breach of HTM 81, paragraph 5.69, HTM 2011, paragraph 4.17 and paragraph 11.57 of HTM 2007:

"Essential services cables should normally be segregated from non-essential services. If segregation is not possible, essential services cables should be fire-resistant and installed with physical barriers"

294. In addition, Project Co alleges that the failure to provide separate essential and non-essential services was in breach of the requirement in the Project Agreement for a split distribution system (see paragraph 16.4.2.11).

295. Appendix 1 to Lendlease's Amended Defence repeats its defence in relation to Defects 1 and 1A (including the Fire Strategy Defence), contends that (i) the cables installed were fire resistant and that this meets the guidance in HTM 2011 at 3.59 and 3.60; and (ii) HTM 2007, 2011 and 81 provide guidance on what strategies could

be adopted adequately to mitigate the risk of a single fault damaging both essential and non-essential cabling but “alternative methods of compliance are feasible”.

296. Mr Bradley raised an additional issue in his report, observing that the system was a “unified” system rather than an “essential/non-essential system”. As he explained in his evidence, the system is unified because the generator and the mains supplies are distributed through the same system. There are two sets of cables, the A and the B set, each of which supplies all of the electrical systems. Put another way, the A and B circuits fed by the cables are part of a unified system such that both circuits are 100% generator backed (an A+B design). Thus there are no “essential” and “non-essential” cables as described in HTM81 and 2011; instead all cables are “essential”. Accordingly, in his opinion, there is no requirement for the cables on the unified services to be fire rated (save for those required to operate in the event of a fire).

297. In my judgment Defect 9 is made out on the evidence and I accept that there is a breach of the Applicable Standards and thus breaches of the various provisions of the D&B Contract to which I have referred above, for the following main reasons:

(1) It is common ground (and is accepted by Mr Bradley in his report) that “The cables from the low voltage switchgear and generator switchboard are routed on the cable management system of trays and ladder racking within the plant room area and then to equipment in the hospital. There is no substantive physical segregation between the ‘A’ and ‘B’ supply cables other than that of necessity caused by their installation on the cable management system”. It is also common ground that the A and B supply cables include the essential and non-essential supplies. Mr Bradley confirmed in his evidence that a fire in an A cable could affect the B cable also.

(2) Mr Bradley acknowledges in his report that with the exception of cables supplying the equipment required to operate in the event of a fire, the cables are not fire rated (contrary to Lendlease’s defence). Mr Bradley also accepts that the cables supplying the smoke extract fan control panel “should be fire rated but are not”. This was plainly a defect.

(3) Mr O’Mahoney’s view, which I accept, is that the requirements of the D&B Contract and the HTMs are not met by the arrangements at the Oncology Centre and there is nothing in the Rev 19 Fire Strategy permitting a derogation. Paragraph 16.4.2.11 of Sub-Part F, Part 3 of Schedule 8 to the

Project Agreement obliged Project Co to ensure a split (i.e. segregated) electrical distribution system of essential and non-essential services.

- (4) Although Mr O'Mahoney's evidence in cross examination was nevertheless that the system was a good one, his evidence was subject to the clear qualification: "if the compartments were installed".
- (5) Mr Bradley confirmed in his evidence that in order to comply with the requirement in paragraph 16.4.2.11 for a split distribution system where there was an A+B design, as in this case, the A side would need to be separated from the B side by segregation or separation (in other words that there would need to be a sufficient degree of distance between them so that an effect on one is unlikely to affect the other). Furthermore, he accepted that where there is an A+B system, the A and B sets of cables "should be segregated" using "all possible efforts" as required by the HTMs.
- (6) When it was put to Mr Bradley that Lendlease did not use all possible efforts to provide cable segregation he was able to respond merely that he did not know and that he hadn't identified the route of every A and B cable. He did confirm that he had seen instances of essential cables not being segregated. Mr Bradley also confirmed that he did not remember seeing any provision in the Rev 19 Fire Strategy addressing the contractual requirements for a split distribution system.
- (7) Mr Bradley's evidence was that paragraphs 2.15 and 2.16 of HTM 2011 were the only parts of HTMs 2007 and 2011 that addressed unified distribution systems and that these required a risk assessment to be made by reference to the likely outcome of a loss of power to various parts of the facility. There is no evidence whatever of any such risk assessment being made.
- (8) In all the circumstances, it is unnecessary to look in greater detail at the various provisions on which the experts relied in the HTMs. Lendlease was not contractually entitled to install the unified system described by Mr Bradley and was in breach of contract in so doing. In any event, as Mr Bradley confirmed, just because the system at the Oncology Centre was unified did not mean that the issues in respect of separation and segregation of power supplies could simply be ignored – it was still necessary to consider them.

Defects 5 and 6

298. Defects 5 and 6 concern the allegation that the route for the removal and renewal of the transformer units and the individual generators within Plant Room 2 is impractical and/or inadequate.

299. Project Co argues that the removal and/or replacement of the transformers and generators was entirely foreseeable and should have been accounted for at the time of design, particularly in light of the following Applicable Standards:

(1) paragraph 5.13 of HTM 2023, Part 1:

“Some services may have to be renewed once or twice during the useful life of a building. Accommodation should be planned to allow for this and take into account both weight and size of major items”

(2) paragraph 3.15 of HTM 2007:

“[High Voltage] sub-stations should be accessible from a road to allow easy access for transformer changing, fire appliances, maintenance vehicles etc.”

(3) paragraph 4.121 of HTM 2011:

“The main access to a generator room should allow sufficient clearance for the passage of both engine and generator. Anchor rings should be provided inside and outside the engine room for drawing in and out the emergency generator set where access overhead is not provided to off load with an overhead crane”

and

“where practicable, generator rooms should be located at ground level”

300. In its opening submissions for trial (and in addition to the provisions of the D&B Contract and Project Agreement to which I have referred above), Project Co asserted that Defects 5 and 6 gave rise to various other breaches of contract, which, as far as I can see, have not been specifically pleaded by Project Co. However, I did not understand Lendlease to take any point on this.

301. These other breaches of contract included:

(1) Paragraph 3.8 (Handback & Residual Life Expectancy) of Part 3, Sub-Part C, Schedule 8 to the Project Agreement:

“3.8.2.4 Materials and components forming part of the Facilities, which require maintenance and replacement within the life of the Facilities, must be selected, located and fixed in such a way as to minimise future inconvenience, disruptions and to avoid temporary closure of the Facilities.”

(2) Paragraph 4.6 (Loadings and Structural Flexibility) of Part 3, Sub-Part C, Schedule 8 to the Project Agreement:

“4.6.6 Project Co shall include, within their design, provision for removal, replacement and upgrading of installed plant and equipment. As part of this element of design, a comprehensive replacement strategy shall be prepared for implementation. This strategy shall, wherever possible, consider how these works can be undertaken whilst minimizing disruption to the function of the completed Facility.”

302. Lendlease denies Defects 5 and 6 – relying on essentially the same defence for each and referring to the transformers and the generators as “the plant”. Aside from repeating its defence to Defect 1 (including the Fire Strategy Defence, which appears to me to be largely, if not wholly, irrelevant), Lendlease contends in Appendix 1 to its Amended Defence that the design was “shared and discussed during the bid phase and all parties were aware of the position of the plant”. It denies that any potential renewal of the plant is impractical or “that this is a defect”.
303. Further, Lendlease asserts that the potential need to renew the plant “is a contractual risk in respect of maintenance that resides with Project Co”. It goes on to say that Lendlease provided Project Co with the AECOM plant replacement strategy (“**the PRS**”) and Risk Assessments and Method Statements (“**RAMS**”) and that “This details how plant can be removed and replaced by essentially reversing the methodology via which the plant was hoisted and secured when it was installed”.
304. The transformers and the generators are very substantial pieces of plant. Mr O’Mahoney’s evidence (which I accept) is that once the transformer housing enclosure is dismantled, the overall size of each internal cast resin transformer is 1830mm (l) x 935mm (w) x 1940mm (h) and the weight of each transformer is 3750 Kg. Each complete installed generator measures 5811mm (l) x 1672mm wide x 2330 mm high and weighs approximately 10,324 Kg without water or fuel.
305. It is common ground between the experts that removing and replacing the transformers and the generators will, in Mr Bradley’s words, “present some logistical challenges”. In his report, Mr Bradley refers to the difficulties created by reason of

the plant areas being constructed on level B1, one storey above road access and accepts that removal of the transformers and generators would not be an easy task.

306. Both the transformers and the generators will need to be moved towards the louvres in the façade. It will then be necessary to remove the louvres, or part of the louvres and some external wall elements before manoeuvring removal through the opening onto a staging platform created by scaffolding running between the road and the façade of Plant Room 2. From here, the plant can be lifted into a vehicle for ongoing transit. The internal route towards the louvres is complicated in the case of transformers 2 and 3 by the need partially to demolish the internal separating walls between them, and in the case of the generators by the presence of 12 acoustic attenuators, each 2400mm long, 2900mm wide and 3000mm high which are positioned between the generators and the external louvres.
307. This means of removal was identified by Lendlease in its Health & Safety File, which identifies the PRS for all plant within Plant Room 2 in section 5.1 at paragraph 2.3:

“...Major removal via demountable louvres through the perimeter of the building is afforded for the air handling plant, transformers and HV/LV switchgear. The HV and LV switchgear and transformers are removed via de-mountable external louvres onto a temporary staging platform, from where units can be craned onto low level lorries located on the road side adjacent Chancellor wing. Each item can be removed without isolation/removal of adjacent items. The removal of one transformer or associated HV/LV switchgear does not require isolation or removal of adjacent systems”.

308. In his report, Mr Kavanagh refers to the fact that transformer 1 has recently been removed, but via a different route to that envisaged in the PRS. Rather than being removed via the louvres in the external wall of the building, it was taken through LV1 into Plant Room 2 and then into the main corridor on level B1.
309. It is accepted by Project Co that it is in principle possible to remove transformer 2 in the same way (indeed Mr Kavanagh considers this to be “a preferable, and possibly safer, method of replacement” for transformers 1 and 2). However, his evidence (which was unchallenged) is that the requirement to remove doors and frames is beyond what would reasonably be expected in a coordinated PRS, that the risk of trapping limbs remains and that there are three qualifications, namely (i) a structural engineering assessment of the structural floor slab loading levels in the main corridor floor to determine whether the designed loading capacity is adequate for the weight of the transformers; (ii) confirmation that the methodology used for lifting the

transformers meets current CDM regulations and (iii) consideration as to how this will affect the operations of a live hospital.

310. In any event, Mr Kavanagh's view is that the alternative route is not feasible for transformer 3, as it would require the intermediate wall between transformers 2 and 3 to be dismantled. Lendlease did not address the alternative route for removal of the transformers in its evidence and nor did it seek to gainsay Mr Kavanagh's evidence about the unsatisfactory nature of that alternative route.
311. In my judgment, Defects 5 and 6 are made out on the evidence and I accept that whilst there may have been insurmountable reasons as to why Plant Room 2 was located at level B1, one storey above the ground, nevertheless Plant Room 2 was not properly planned to allow for services to be renewed, there was no comprehensive replacement strategy and the main access to the generator rooms did not allow sufficient clearance for passage of the generators, contrary to HTM 2023, para 5.13, HTM 2011, para 4.121 and paras 3.8.2.4 and 4.6.6 of Part 3, Sub-Part C, Schedule 8 to the Project Agreement. Lendlease retained responsibility for the choice and location of plant pursuant to clause 15 of the D&B Contract. Accordingly, there were also breaches of the various provisions of the D&B Contract to which I have referred above.
312. My main reasons are as follows:
- (1) There is no evidence whatever to support the proposition in Lendlease's Appendix 1 that the design for the transformers and generators was "shared and discussed during the bid phase and all parties were aware of the position of the plant". Mr Bradley says in his report (without reference to any documents) that "[t]he development of the layout and space planning of the hospital was carried out in consultation with the Trust" but he goes on to say that "[e]asy access to the plant room areas **would have been** balanced with the requirements and demands of other areas and department..." (**emphasis added**); the use of the conditional tense making clear the lack of evidence and reliance upon assumption. He also relies on the point that "no adverse comment on the location of or access to the plant spaces" was made by the Trust, hardly evidence of its agreement or approval. In cross examination, Mr Bradley accepted that he had seen no specific evidence or document in relation to any consultation with the Trust or with Project Co about the relationship and layout in Plant Room 2 of the Electricity Substation itself

and confirmed that “we do not really know what process Lendlease went through in this regard”.

- (2) Indeed the only contemporaneous evidence to which I have been referred is an email exchange dated 24 November 2007 between Wingate (presumably part of Lendlease’s supply chain) and Lendlease in which the observation was made by Wingate that “there are 3/4 transformers in the Plant Room, which due to Ducting etc. we can not get out”. Lendlease’s response to this was that the issue would be reviewed on a site visit during which ‘the art of the possible’ would be considered. It is unclear what, if any, conclusions were arrived at following this site visit and whether the Trust was informed of the issue.
- (3) I accept Project Co’s case that, in light of the provisions of clause 15 of the D&B Contract, Lendlease retained responsibility for the choice of location of the transformers and the generators and, even assuming that the Trust approved that choice (in respect of which there is no evidence), such approval would not relieve Lendlease of responsibility under the contract.
- (4) Mr O’Mahoney’s evidence, which I accept (and which was not challenged in cross examination), is that the PRS is inadequate, that it presents an uncoordinated and unconsidered approach to renewal/replacement of plant and that it contains insufficient detail to enable facility teams to understand the replacement requirements. In particular, Mr O’Mahoney observes that most PRSs for medium to large buildings contain comprehensive and detailed studies of access routes, penetrations, doors, lift sizes and schedules dimensions and weight of all plant and equipment, usually in a separate report. As he points out, however, the PRS “explains the complete electrical substation plant replacement in four sentences and the word “Generator” does not get a mention”.
- (5) Mr Kavanagh’s evidence, which I also accept (and which was not challenged in cross examination), supports that of Mr O’Mahoney. Further to a simulation for the replacement of the transformers and the generators via the route identified in the PRS, he is of the view that the PRS “does not provide a comprehensive replacement strategy” in either case. Mr Bradley agreed with this in cross examination (“That is hardly comprehensive? A. It is not”).

- (6) In so far as the route devised for the transformers is concerned, amongst other things, Mr Kavanagh points out that (i) the louvre panels do not seem to be readily openable or demountable; (ii) secondary brackets supporting the louvres at the head and the base will need to be removed; (iii) the width of the louvre opening in TX3 is only approximately 165mm wider than transformer 3 which will not permit safe removal and which is not referred to in the PRS; (iv) an alternative solution of removing transformer 3 via the louvres in TX2 would require demolition of internal partition walls (an unreasonable requirement in Mr Kavanagh's opinion) and the removal of localised wall mounted electrical services; (v) the temporary staging platform will require the input of a structural engineer to design the platform; and (vi) when removing transformers 2 and 3 crane access to the temporary staging platform will be restricted by the overhanging riser construction and the projecting portion of building on level B2.
- (7) In so far as the route devised for the generators is concerned, many of the general issues identified above in relation to the transformers apply. In addition, Mr Kavanagh points out that the removal of the generator acoustic attenuators would necessitate demolition of an internal wall, which he considers unreasonable and that no clear strategy or spatial allowance has been developed for their removal prior to the removal of the generators. The possible alternative route identified for transformers is not available in respect of the generators.
- (8) Mr Bradley's position in his report was that, although removal of the generators and transformers would not be easy, there had been no breach of any contract condition on the part of Lendlease. However, I note that, unlike Mr Kavanagh, he did not consider the provisions of the PRS and nor did he consider the mechanics of removal of the transformers and generators in any detail. Upon being asked whether he had considered paragraph 4.6.6 of Part 3, Sub-Part C, Schedule 8 to the Project Agreement, Mr Bradley confirmed that he had considered the need for a PRS but that when he had opined on there being no breach of contract in respect of Defects 5 and 6, he had not considered the fact that paragraph 4.6.6 required a "comprehensive" replacement strategy. Upon being taken to the PRS itself, Mr Bradley confirmed that aspects of the PRS as drafted could not in fact be achieved

(i.e. it was not possible to remove each item without removal of adjacent items – this applied to the need to remove the RMUs to enable the transformers to be replaced and to remove the attenuators to enable the generators to be replaced).

(9) Under cross examination on the removal of the transformers, Mr Bradley admitted that the need to remove the louvres using a crane or platform created a risk of damage, that in principle it would have been possible to design the louvres in a way which could have reduced the inconvenience, that getting the transformer out of the louvre “will be a challenging procedure”, that it was “quite possible” that it would be necessary to demolish a wall in order to take transformer 3 out through the transformer 2 room louvres and that this created inconvenience and could have been rendered less disruptive had the design been different. Furthermore, Mr Bradley confirmed that whilst the design intent appeared to have been for a shutter door between transformer rooms 2 and 3, he did not remember seeing a roller shutter.

(10) Under cross examination on the removal of the generators, Mr Bradley accepted that in order to remove generator 2 through the louvre it would be necessary to demolish the wall in which the attenuator sits, that in order to remove generator 3 it would be necessary also to remove generator 2, its attenuator and the wall in which it sits and that the demolition of walls creates inconvenience. Mr Bradley also accepted that even on the assumption that a generator could be dismantled before trying to remove it, the configuration of the space made that a very difficult exercise.

(11) Mr Bradley accepted in cross examination that removing the transformers and generators “would be a pig to do” and in light of his concessions, I consider that his evidence was to the effect that the materials and components forming part of the facilities which require maintenance or replacement within the life of the facility (i.e. the transformers and the generators) were not located and fixed in such a way as to “minimise future inconvenience” (paragraph 3.8.2.4 of Part 3, Sub-Part C, Schedule 8 to the Project Agreement), such that, in the end, there was little between him and Project Co’s experts. I agree with Project Co’s closing written submissions that Mr Bradley’s conclusion in his report that there had been no breach of contract by Lendlease cannot survive his evidence given at trial.

(12) Finally, I note that the defective arrangements for the transformers were contrary to the Contract Derogations Schedule which stated the following against HTM 2023: “The principles adopted to easily maintain, service, remove and replace all of the plant have been incorporated”. In my judgment, the evidence of the experts on both sides establishes that this was simply not the case, as does the fact that the recent removal of transformer 1 was achieved via a different route from that planned in the PRS.

Issue 8: What (if any) of the remedial works as pleaded by Project Co are necessary, practical and proportionate to rectify such alleged defects?

313. Lendlease accepts that the Defects that were admitted prior to the trial will necessitate the expenditure of £489,210, which would involve the installation of a water mist suppression system deployed over the generator equipment and the switchgear rooms and the replacement of some defective cables to a small section of the smoke extract fan panel. Further, it now suggests that even if the court finds that Project Co’s case is made out in respect of many or all of the Defects, this scheme would continue to be sufficient to “remedy the real risk”. In other words, notwithstanding Project Co’s understanding as set out in its written opening that the remedial works proposed by Lendlease are not intended to be a more reasonable alternative scheme to that said to be necessary by Project Co, that was in fact the way they were presented at trial.

314. Before turning to consider the detail of the Proposed Remedial Works and Lendlease’s arguments, I should deal first with the law, which was so uncontroversial as to be barely mentioned by Lendlease.

315. Project Co submitted in opening, and I accept, that in determining whether a remedial scheme is reasonable, the Court will consider whether and to what extent a claimant relied upon expert advice in deciding to carry out the work. The relevant principles were identified by Akenhead J in *Axa Insurance UK Plc v Cunningham Lindsey* [2007] EWHC 3023 (TCC):

(1) The question of whether advice of an expert, even if professionally reasonable, can convert expenditure into reasonable expenditure involves a consideration of the facts in any given case (at [267]);

- (2) There must be some effective causal link between the incurrence of the expenditure upon the advice of the expert and the breach of contract (at [267]);
 - (3) If two remedial schemes are proposed to rectify a defect which is the result of a defendant's default, and one scheme is put in hand on expert advice, the defendant is liable for the costs of that built scheme unless it could be said that the expert advice is unreasonable. In that context it is not necessary to establish that the expert advice was negligent (at [269] citing *McGlenn v Waltham Contractors* [2007] EWHC 149 (TCC), at [827]);
 - (4) Although reliance on an expert will always be a highly significant factor in any assessment of loss and damage, it will not on its own be enough, in every case, to prove that the claimant has acted reasonably (at [269] citing *McGlenn*).
316. It is not an answer to a claimed remedial scheme to demonstrate that the defects could have been rectified through an alternative scheme at a lower cost (see *Struthers v Davies* [2022] EWHC 333 (TCC) at [29]). Lendlease must demonstrate that Project Co's Proposed Remedial Works are unreasonable. This appears to be accepted by Mr Hickey.

The Stage 1 Works

317. The Stage 1 Works are said by Project Co to comprise works to mitigate the risk created by the lack of fire protection for the generators, the absence of fire separation between the generators and other areas of Plant Room 2 and the presence of the large volume of fuel stored within the generator rooms. They are designed to provide health and safety protection and to keep the systems in the Oncology Centre functional pending the permanent remedial works.
318. The Stage 1 Works have been advised by Quadriga and their scheme prepared by Hoare Lea. They are summarised in Hoare Lea's MEP & Fire Engineering Summary Report, Rev 1 and involve:
- (1) Installing an external Dump Tank that provides 60 minutes of fire resistance together with dump lines from the existing fuel tanks within the generator rooms that permit fuel to be evacuated into the external tank in the event of a fire;

- (2) Installing a temporary external generator to supply power via a fire-proof cable installation that is segregated from other circuits, thereby protecting the secondary supply to fire safety equipment and removing reliance on the electrical equipment and generators currently within Plant Room 2. This would address the risk created by Defects 1, 1A, 1B and 1C in the period prior to the Stage 2 works. It is not intended to retain the external generator following completion of the Stage 2 Works.
- (3) Installing a secondary power supply to equipment including smoke extract fans, the fire-fighting lift, the lighting of the fire-fighting shaft and the sprinkler pumps to be supplied from the temporary generator, thereby reducing reliance on the current cabling. These works are to address the risk created by Defects 1A and 1B in the period prior to the Stage 2 Works; however, where possible it is intended to retain any fire rated cables used in this circuit and to divert them to the permanent supply switchboards as part of the Stage 2 Works.

319. Lendlease's case is that, whether or not it is liable for the Defects, the Stage 1 Works are unnecessary and so unreasonable. This case appears to be dependent upon the assertion that a fire suppression system would provide sufficient risk mitigation. However, this case does not appear to me to be borne out by the evidence:

- (1) Mr Davis identified the fuel dump proposal in figure 34 to his report. His evidence, which I accept, is that (in the absence of compartmentation and fire suppression) the fuel tanks could support combustion should a fire occur in the generator room and that in the context of the Stage 1 Works, "the proposed fuel dump will reduce the risk, and as such is a reasonable consideration". I did not understand Mr Jones to disagree with this. In their second Joint Statement, the fire experts agreed that the fuel dump proposal "is required to mitigate the risk in the short term of the risk of a fire in the generator room". Mr McDonald also expressed the view in his report that the remedial works to provide the fuel dump system are reasonable.
- (2) Mr Jones (who acknowledged in evidence that he did not have expertise in installing fuel dump systems or fire suppression systems) nevertheless caveated his opinion in his report, observing that "the common sense approach would be to install the suppression system first" and that this would then obviate the need for the installation of fuel dump tanks. However, under

cross examination he accepted that this view was not based on any risk analysis or risk assessment. Mr Davis accepted that if a fire suppression system could be put in quickly then fuel dump tanks would be unnecessary but he also said he did not have “a magic wand” to create such a situation.

(3) There is no evidence that a fire suppression system can be put in quickly. On the contrary – it would appear that fire suppression works can only take place once works to fire-rate the internal construction within Plant Room 2 have been carried out. Mr Jones agreed that if the remedial scheme required work to compartment walls, work in the ceilings, cabling work and the installation of fire dampers (as in my view it does for reasons I shall turn to in a moment) then it would be done in “a single installation” and the fire suppression system would not be put in first.

(4) As Project Co pointed out in opening, even on Mr Somerset’s programme for the Stage 2 Works, the fire suppression works do not commence until week 20 and do not finish until after week 46. By contrast, the Stage 1 Works are anticipated to be completed in 8 weeks.

(5) Mr Jones accepted in cross examination that the fuel dump system proposed would mitigate fire safety risks whilst tendering of the Stage 2 Works was taking place and during the implementation of the Stage 2 Works (when there would be an increased risk of a fire in Plant Room 2).

(6) In all the circumstances, the weight of evidence plainly supports the proposition that the installation of a fuel Dump Tank is reasonable.

320. I did not understand the need for a temporary generator or a temporary power supply as part of the Stage 1 Works to be seriously challenged by Lendlease in its evidence.

321. In all the circumstances, I accept that the Stage 1 Works are “necessary, practical and proportionate” given the Defects that I have found to exist and given the increased risk of fire by reason of those Defects (including during the implementation of the Stage 2 works).

The Stage 2 Works

322. The Stage 2 Works, proposed by Hoare Lea, are identified in their MEP & Fire Engineering Summary Report, Rev 1 and further described in the Scott Schedule. The overarching aim of these works is to ensure that the primary and secondary supplies are provided and installed in such a way that any failure of one supply (for

example by reason of the occurrence of a fire) will not result in the failure of the other supply.

323. This aim is realised by (as Hoare Lea explain): “the separation of the electrical substation in plantroom 2 from the remainder of plantroom 2 by means of 2 hour fire separation and the division of the substation into two parts that have 2 hour separation from each other”. These compartmentation works, which will separate the transformers and the generators, will necessitate the installation of a mechanical ventilation system together with additional fire dampers and alterations to the ductwork installations. Furthermore, it is intended to provide fire suppression in the form of (i) a foam extinguishing system in the generator area (which will be one single fire compartment albeit with additional physical separation between generators in the form of drop down curtains so as to facilitate the fire suppression system); and (ii) a gaseous system in the switchgear spaces, together with associated works. Finally, measures are proposed to separate primary and secondary cabling, including by re-rerouting an existing HV cable feeding transformer 3, the transformer nearest to the generators, so as to avoid primary and secondary supplies running through the same fire compartment.
324. No proposals were made by Hoare Lea to address the shortcomings identified in Defects 5 and 6. Hoare Lea remarks only that “work...can be done as and when the need for removal of plant for maintenance purposes becomes necessary.” I shall return to these Defects in a moment.
325. During cross examination, Lendlease’s case that the installation of a fire suppression system would be sufficient in itself satisfactorily to remedy the Defects was, in my judgment, substantially undermined. Mr Jones accepted that a remedial scheme in which there was fire suppression, together with segregation of cables and compartmentation, would be more resilient than a system which provided only fire suppression. His view was that fire suppression alone was enough, but he accepted that provisions for segregation and compartmentation were to be found within the relevant codes and that the Proposed Remedial Scheme is code-compliant to modern standards. Taken together with Mr Bradley’s evidence in his report that “any remedial works ought to be carried out to current standards and not to redundant and superseded standards”, it is clear that Lendlease’s own experts accept that the Proposed Remedial Scheme is code compliant to modern standards and that this is what any remedial scheme should be.

326. Against that background, I accept Mr Selby’s submission in closing that the court must choose between Project Co’s Proposed Remedial Scheme on the one hand (accepted as code compliant by Lendlease’s experts) and Lendlease’s remedial scheme, involving the installation of a water mist system and little else as a “universal panacea” for all the Plant Room 2 Defects, on the other. I have little hesitation in rejecting Lendlease’s scheme and in accepting that Project Co’s Proposed Remedial Scheme is “necessary, practical and proportionate” for the following main reasons:

(1) Lendlease’s experts had plainly not investigated the Lendlease proposal and were unable to give clear or convincing evidence in support of it:

- i. Mr Jones’ evidence in his report was that “an appropriate suppression system” should be installed in Plant Room 2 to remedy Defect 3. He expressed the view that Project Co’s proposed remedial works amounted to betterment with the exception of the fire suppression system and limited works to fire rate cables to the smoke extraction system – however this appears to have been premised upon his reliance upon the Fire Strategy Defence. He “submitted” that the addition of a fire suppression system would provide protection to cables running through the HV/generator room “mitigating the risk of damage and the requirement to relocate them”. Mr Jones identified various options for an “acceptable” fire suppression system, including (in one sentence), a water mist system. However it was clear that he had not investigated this option because he went on to say that “The manufacturer should confirm that the external louvres do not adversely affect performance”.
- ii. Under cross examination, Mr Jones accepted that he had identified no specification for any particular fire suppression system and had not even identified a preferred system, much less conducted any analysis into which would be the most suitable system. It is clear that he has no technical objection to the fire suppression aspects of Project Co’s scheme. He confirmed in cross examination that he was not saying that the Hoare Lea proposal for fire suppression was unreasonable and he accepted that a gaseous system over the HV/LV plant area was

compliant with the Project Agreement, while a foam deluge system in the generator area was also suitable.

- iii. Mr Jones sought to rely upon a proposal from Ventec Systems dated 16 June 2021 for the supply of a water mist system, but, in my judgment, this proposal does not assist. Mr Jones accepted in cross examination that Ventec had quoted on the basis that additional fire rated construction was installed, that Ventec had identified the need for “enclosures” in order for the water mist system to work (including “automatic interlocks and safeguards”) and that the risk of a large enclosure was that the mist might dissipate and fail to extinguish the fire. He also agreed that in fact Ventec’s proposal for the protection of the electrical switch rooms “would be to utilise an Inert Gaseous Suppression Agent” and that the Ventec quote was nothing more than a proposal based on the information Ventec had been given.
- iv. Notwithstanding Mr Jones’ attempt to rely upon the Ventec proposal, Lendlease’s remedial scheme does not include any additional fire rated construction or enclosures incorporating automatic interlocks and safeguards and nor is there any evidence that Lendlease’s experts have considered the height or footprint of the rooms in Plant Room 2 in recommending a water mist system. Mr Jones confirmed in his evidence that he has not seen any tests to establish that a water mist system would operate effectively in the c16,000m³ Plant Room 2 and that to support such a proposal a further quote would need to be obtained from Ventec. Neither Lendlease, nor its experts has sought to obtain such a quote.
- v. Mr Jones accepted in cross examination that a suppression system together with compartmentation would provide more resilience, as provided for by HTM 81.
- vi. Mr Bradley gave no evidence in his report about a proposed water mist suppression system and merely said in the Joint Statement that “gas and water mist systems should be considered”; he had plainly not given them any consideration himself.
- vii. There is no support from Lendlease’s experts for the specific proposition that a water mist suppression system is an adequate

alternative to the Proposed Remedial Scheme. Lendlease has obtained no evidence from a specialist in the design and installation of water mist suppression systems to support its wide-ranging assertions about their efficacy. Mr Davis' evidence was that it is usual to enlist an expert to design a suitable suppression system, but as he explained "I've not seen any form of design justification as to why we can use a misting system to remove passive fire protection between separation of critical power supplies to a hospital".

(2) In the circumstances there is nothing to gainsay the evidence of Project Co's experts that (i) a water mist system is not appropriate; and that (ii) a water mist system (or indeed any suppression system) would be inadequate on its own to address the Defects:

- i. Mr Davis' evidence in cross examination, which I accept, was clear: "You can't use water suppression to remove compartmentation and I think that is a very important point". He was unaware of any research to support the use of a water mist system as a replacement for passive fire protection measures such as compartmentation and he had only ever seen water mist systems in the residential sector and never in a hospital. He was unaware of any situation in which a water mist system had been relied upon as an adequate replacement for compartmentation.
- ii. Mr O'Mahoney's evidence in his report was that although Mr Bradley had mentioned a water mist system in the Joint Statement, "as an electrical engineer I would always opt to stay clear of mixing water and electricity, regardless of whether the system emits water vapour or not". This was a position he strongly maintained under cross examination saying he would "vouch against [water mist systems] every single time if it was one of my jobs". He also observed that he had never seen a water mist system over an electrical room in 30 years, that having spoken to water mist providers most say that a water mist system is "the last option you would use in an LV room if you had no other option" and that he had concerns over a maintenance error. I accept this evidence. Mr O'Mahoney also expressed the view that he did not see a water mist system as an alternative to having

compartmentation and suppression, albeit that was primarily a matter for the fire experts.

- iii. Further and in any event, I observe that Schedule 8.4, Volume 17 of the Project Agreement required a gaseous system in the HV/LV areas. Lendlease's proposal for a water mist system is not compliant with this requirement.

(3) Lendlease's experts provided little assistance on the remedial scheme proposed by Project Co:

- i. Mr Jones confirmed in his report that he had "not yet had the opportunity to consider or opine upon whether the method proposed in respect of the remedial works is correct, reasonable or proportionate".
- ii. Mr Bradley said in his report: "I have not been instructed to examine in any detail the remedial works package of documents prepared by Hoare Lea" – he had been asked only to "give a summary appraisal". As part of that summary he agrees that "in the absence of the fire strategy, the provisions of HTMs 81, 2007 and 2011 should have applied". The high point of this summary appears to be that "It is **suggested** that the [Hoare Lea] report, along with its packages of attachments are generally a proposal to improve the fire related services at the hospital but **are not necessarily** a package of works to remediate defects with the original installation" (**emphasis added**) – hardly a ringing endorsement of the proposition that the Proposed Remedial Works are unreasonable.
- iii. Indeed Mr Bradley went on to confirm in cross examination that "the provision of a suppression system...will not achieve segregation or separation of the power supplies", which is required by the electrical HTMs.

(4) Aside from being cross examined about the viability of a water mist system, and sticking to their guns that it was inappropriate, Project Co's experts were largely unchallenged on other aspects of the Proposed Remedial Scheme. Mr McDonald was challenged as to whether consequential mechanical works were required and flowed from a breach of contract by Lendlease, but he was clear that they did, and I accept his evidence, which was supported by

detailed calculations which it became clear that Mr Bradley had entirely overlooked.

327. I accept that the proposed Stage 2 Works amount to a reasonable proposal, which Lendlease has failed to undermine over the course of the trial. I reject Mr Hickey's submissions in closing, which struck me as extremely optimistic in light of the evidence, that "[i]t is obvious that an available solution now to overcome any risk would be a water mist system" and that "[i]f a fire suppressant system were now to be installed it would remove the need for the majority of the other work alleged to be necessary". Mr Hickey was left to "submit" that a water based system is now the "proportionate and best option" albeit he has no evidence whatsoever to support such submission.
328. Indeed it is wholly unclear how it could be reasonable for the court to determine that all that is required by way of remedial works is a water mist system in circumstances where that would not be compliant with the Project Agreement, it would not be compliant with HTM 81 and provides less resilience than Project Co's proposals, it would not in fact be consistent with the Ventec proposal on which Lendlease relies; none of Lendlease's experts has performed any investigation into or consideration of the design of such system and it is not supported by Lendlease's experts.
329. A specific issue arises however, in relation to Defects 5 and 6. There is currently no viable remedial scheme identified by Project Co in the Amended Scott Schedule to address the difficulties surrounding the removal or replacement of the transformers and the generators, because any major scheme of remedial works would cause significant disruption to the operation of the Hospital which Project Co accepts would be disproportionate relative to the costs that would be incurred in removing or replacing the transformers and the generators.
330. Accordingly Project Co claims that it is entitled to the additional costs of removing or replacing the transformers and the generators in the manner required by the PRS, as opposed to doing so in a manner that would be compliant with the requirements of the HTMs. Lendlease rejects this suggestion, essentially because it contends that the costs of removal and replacement of plant are already covered in Engie's life cycle cost submission at Engie's contract award. Lendlease pleads in its Amended Defence that "The assumptions made to accumulate the costs allegedly incurred are based on multiple plant replacements occurring on a 10 yearly cycle, however it is known that plant will exceed likely contractual conditions and therefore potentially

only one plant replacement will take place. Transformers have a 30-40 year life cycle and generators have 25-30 years.”

331. On balance, I do not accept Lendlease’s case on this point. While I suspect that it is likely that Engie did indeed take the extra cost of replacement and removal into account in its life cycle submissions, ultimately I agree with Project Co that Lendlease has not established that this is in fact the case. There is simply no evidence on the point whatever. Even if Engie did take the extra costs into account, there is every chance that this will in itself have affected the costs that Project Co has to pay under the Estates Management Contract, as Mr Selby submitted in closing (albeit again there is no evidence on this point either).
332. Further, I accept Mr Kavanagh’s evidence that works of this nature will need to be undertaken by a specialist contractor, albeit in cross examination he accepted that might be Engie. I note that Mr Kavanagh’s view is that the specialist contractor would require the input of a structural engineer and that it would be responsible for determining and proposing the procedures for removal of the fabric and plant together with the type of machinery required to enable this. It would also be responsible for advising on the position of such machinery in consideration of the need to maintain safe escape from Level B2 into the external lane, as well as manoeuvrability of the machinery and the safety of the public and operators.
333. Despite including in its revised list of issues at closing the need for the court to consider whether Defects 5 and 6 involve loss which would be suffered by Project Co or which would only give rise to a claim for loss by Engie, Lendlease made no detailed submissions on the point. In so far as may be necessary I accept Project Co’s case, advanced in opening, that even if replacement and removal works are covered by Engie’s contract and can be expected to have been carried out by Engie, they would be *res inter alios acta* (see *Lowick Rose LLP v Swynson Ltd* [2017] UKSC 32 per Lord Sumption at [11]). I did not understand Mr Hickey to gainsay this proposition.

Issue 9: Does Project Co intend to carry out any remedial works and, if not, what is the relevance of any absence of intention?

334. At paragraph 52A of their Amended Defence, Lendlease pleaded for the first time that Project Co does not intend to carry out any remedial works. Instead, it is

suggested that Project Co will wait until quantum is awarded before deciding what works to carry out:

“It is denied and Project Co is put to proof that it has any actual intention to commit to and carry out any remedial works and any contractual liability to incur the cost thereof. It is considered more likely that Project Co is seeking to wait to see what if any quantum is awarded in these proceedings before making any decision as to what works it may wish to carry out.”

The Law

335. In cases of defective work, the general rule is that the measure of damages to be awarded will be the cost of making the defects good unless that cost is disproportionate. As summarised in *Keating on Construction Contracts* (11th ed 2021) at paragraph 9-071:

“Where there has been substantial completion the measure of damages is the amount that the work is worth less by reason of the defects and omissions, and is normally calculated by the cost of making them good, i.e. the cost of reinstatement, unless this is disproportionate to the end to be attained.”

336. Thus damages for the cost of cure will be awarded provided that the claimant is “seeking compensation for a genuine loss and not merely using a technical breach to secure an uncovenanted profit” (see *Radford v De Froberville* [1977] 1 WLR 1262 per Oliver J at 1270).

337. The court is not normally concerned with how the claimant will use any damages which may be awarded, providing the loss can be established. However, in cases of defective work, the intention of the claimant is relevant insofar as it goes to the reasonableness of reinstatement and thereby the extent of the loss sustained. Various authorities were cited by the parties but I need only refer to two.

338. First, an extract from the speech of Lord Jauncey in *Ruxley Electronics Ltd v Forsyth* [1996] 1 AC 344 (at 359):

“I should emphasise that in the normal case the court has no concern with the use to which a plaintiff puts an award of damages for a loss which has been established. Thus irreparable damage to an article as a result of a breach of contract will entitle the owner to recover the value of the article irrespective of whether he intends to replace it with a similar one or to spend the money on something else. Intention, or lack of it, to reinstate can have relevance only to reasonableness and hence to the extent of the loss which has been sustained. Once that loss has been established intention as to the subsequent use of the damages ceases to be relevant.”

339. Second a useful summary of the general principles applicable when considering an award of damages for defective premises by Ramsey J in *Harrison v Shepherd Homes* [2011] EWHC 1811 at [263], the most relevant of which are as follows:

“(1) There will generally be an award of the cost of reinstatement provided that reinstatement is reasonable: *East Ham v Bernard Sunley* at 434, 445; *Ruxley* at 358D, 360E, 367B.

(2) Reinstatement will be unreasonable if the cost of reinstatement would be out of all proportion to the benefit to be obtained: *Ruxley* at 367B.

(3) The question of reasonableness has to be answered in relation to the particular contract: *Ruxley* at 358D.

(4) It is not necessary for recovery of the cost of reinstatement to show that the claimant will reinstate the property but the intention to reinstate may be relevant to reasonableness: *Ruxley* at 359C to D and 372A to 373E;

(5) If reinstatement is unreasonable then the measure will generally be diminution in value: *East Ham v Bernard Sunley* at 434, 445; *Ruxley* at 360E, 367B;

(6) Where reinstatement is unreasonable and there is no diminution in value, then the court may award damages for loss of amenity: *Ruxley* at 354D, 360H, 374.”

340. I did not understand Mr Hickey to disagree with any of these propositions.

341. It is not unreasonable to take into account commercial considerations. In *Dodd Properties Ltd v Canterbury City Council* [1980] 1 WLR 433 structural damage was caused to the claimants’ building due to pile-driving operations carried on by the defendants on the adjoining land. Remedial work could first have been carried out in 1970 but, as a commercial decision judged exclusively from the point of view of the immediate and short-term welfare of the claimant companies, the court held that it had been reasonable to postpone the expense of the repairs while no harm was being done to the building and the defendants were denying liability. Damages were to be assessed as at the date when the repairs could reasonably have been undertaken, in this case being the date of the hearing:

“The true rule is that, where there is a material difference between the cost of repair at the date of the wrongful act and the cost of repair when the repairs can, having regard to all relevant circumstances, first reasonably be undertaken, it is the latter time by reference to which the cost of repair is to be taken in assessing damages.” (per Megaw LJ at 451)

342. A similar conclusion was reached by the Privy Council in *Alcoa Minerals of Jamaica v Herbert Broderick* [2002] 1 AC 371, where inflation had dramatically reduced the value of the claim between the date on which it had been issued and the final hearing.

The Privy Council held that the claimant had acted reasonably in waiting until money was available from the defendants to pay for the repairs and therefore was not in breach of his duty to mitigate his loss. As such damages were assessed at the date of trial:

“...in a case where damages are the appropriate remedy, if adoption of the breach date rule in assessing them produces injustice the court has a discretion to take some other date.” (per Lord Slynn at 378)

Discussion

343. As articulated in closing, Lendlease’s case as to Project Co’s intention was that the court should accept the evidence of Mrs Berridge in her second statement to the effect that in relation to the Stage 2 Works, Project Co does not intend to commit to and carry out any remedial works until it is in receipt of a decision of the court. Mrs Berridge explains in her statement that “[t]his is because Lendlease has continually denied both the existence of defects and the need to undertake any remedial works (it has only very recently admitted the need for certain limited works in its Amended Defence). Before commencing the Stage 2 Works, the Claimant wants to know whether or not they will recover the cost of the works from Lendlease”.
344. I accept this evidence, which seems to me to be entirely consistent with the evidence given by Mrs Berridge under cross examination, during which she confirmed that Project Co was proceeding on the basis that the Stage 2 Works would be implemented and were “putting things in train”, albeit if changes were required by reason of the court’s ruling, Project Co intended to reflect those in the remedial works carried out. Further I note that her statement goes on to say that “...based on the advice of Hoare Lea, it is my and the Claimant’s understanding that the Stage 2 Works are necessary. Should the court agree, my understanding is that the Claimant intends to carry out the Stage 2 Works”.
345. I accept Project Co’s submissions that the evidence (including the evidence of Mrs Berridge, which I accept) establishes the following chronology in respect of the identification of the Defects and the investigations into the necessary remedial works:
- (1) Questions started to be asked about fire compartmentation in or around 2015 and the issue was discussed from time to time in emails (notably in November 2017 and January 2018) albeit that at this stage there was plainly no full

understanding of the extent of the issue and merely a conversation around the potential need to improve the existing arrangements.

- (2) After receipt of the 2018 Hughes Report (which, as described in the first version of the Hoare Lea report, “concludes that the current arrangements do not adequately control the risk spread of fire”), Project Co immediately implemented mitigation measures in Plant Room 2 with the approval and input of the Trust from 13 August 2018 (see the August 2018 Action Tracker which plainly responded to the 2018 Hughes Report). Mrs Berridge described this as a mitigation plan and it was her evidence that it incorporated input from Mark Cox, the Trust’s fire officer. Project Co wrote to the Trust on 7 August 2018 enclosing a copy of the 2018 Hughes Report.
- (3) Mrs Berridge explained that the Plant Room 2 defects were logged on Engie’s help desk, such that the Trust could monitor their progress. The Trust granted Engie an extension of time for “Response and Rectification” to address these defects.
- (4) On 14 August 2018, Mrs Berridge recorded in an email that “Engie’s Account Manager has met with the Trust Fire Officer who has verbally stated that although he does not feel there is a major fire risk, he does see a business continuity risk with reference to losing essential electrical services, and subsequently the building availability, in the event that a fire damages the said services”.
- (5) In or about October 2018, Project Co engaged Hoare Lea to investigate and opine on the defects in Plant Room 2. As the first version of the Hoare Lea report confirms, it was instructed “to provide a report that reviews the substation installation in plantroom 2 at Bexley Wing on the St James site, describing the existing installation and the issues that are currently present. The primary objective of the report is to identify what actions [Project Co] could take to reduce the risks associated with the electrical installation in the future”. Lendlease denied liability and insisted that the Rev 19 Fire Strategy was the answer to Project Co’s concerns – which, in fact, it was not.
- (6) The investigations have taken some time and the complexity and extent of the remedial works proposed has required significant management as well as cooperation with the Trust to ensure that the remedial work can be

implemented in a manner consistent with maintaining the operation of the Oncology Centre.

- (7) In an email dated 8 April 2019 from Steve Prior of Infraconsult to the Trust, copied to Mr Lassiter, the Trust was provided with an overview of the likely extent of the remediation work and the timescales. The email focussed on three key areas of work, namely (i) switchgear related matters; (ii) fire separation matters within Plant Room 2; (iii) wiring infrastructure matters. On the subject of fire separation matters, the email warned the Trust that the “large amount of co-located Plant...has the potential for a single incident to significantly disrupt the whole hospital provision”. Although Lendlease relied on this email in the context of submissions on betterment, owing to the fact that it makes reference to “enhancement”, I am satisfied that in the context of the chronology of events it was referring only to enhancement of the existing fire stopping measures.
- (8) The Liaison Committee involving representatives from the Trust and from Project Co has met frequently between November 2018 and March 2022 and it is clear from the minutes of those meetings that they have involved discussion of the Defects identified in Plant Room 2, discussion of reports commissioned to investigate the Defects, references to “updates” being provided to the Trust, discussions about the involvement of Engie and agreement from time to time as to the means of progressing the matter. By way of example only, (i) at the meeting on 2 July 2019, it was reported to the Trust that Project Co was now in a position to send Lendlease a letter identifying alleged defects for rectification; (ii) at a meeting on 2 September 2020, attended by Mrs Berridge and two Trust representatives, it was confirmed that a claim had been lodged against Lendlease and that Project Co had instructed Hoare Lea to work in parallel to the claim on a design solution in relation to Plant Room 2 and that “discussions with the Trust were underway on this matter”. The minutes also record that Quadriga had been instructed to identify priority works and that “time had been scheduled for Project Co to review the draft report with the Trust”; (iii) at the meeting on 12 May 2021, attended by Mrs Berridge together with two Trust representatives, a detailed update on the defects was provided - the minutes record that the design solution was near to completion and that “a meeting

will be scheduled with the Trust to review”. I am satisfied that there is no question on the available evidence that the Trust has been kept updated by Project Co from 2018 to date.

(9) Whilst the remedial works have been developed, there is evidence of other works having taken priority in Plant Room 2, such as circuit breaker defects that Engie was required to remedy. The Covid pandemic inevitably appears also to have caused some disruption to the conversations that were taking place over the design of the remedial works.

(10) Mrs Berridge said in evidence that “It has been a very long journey and a huge amount of work”, including having “physically walked [the Trust] through the plant room and walked them through the documents to say, ‘This is a defect’ and issuing reports that set out “options to remedy the defects”. I note that the minutes of a meeting of the Project Co Directors dated 16 November 2020 record that Mr Prior reported that “...an open workshop is scheduled for Friday 20 November with Hoare Lea, the Trust, Engie and Project Co to discuss the technical options...”.

(11) In the course of discussions with the Trust, it is clear that various options for remedial works were discussed, and some rejected (as is evidenced by Hoare Lea’s 23 November 2020 ‘In Situ Remedial Strategy’ document).

(12) As Mrs Berridge confirmed, the Trust has agreed to the Stage 1 Works taking place. Project Co has been negotiating a licence to operate with the Trust in order to put the temporary generator on the Trust’s land and Mr Cox has been in regular communication with the Fire Service in respect of the Stage 1 Works. It seems from progress updates that the need for a fuel dump tank had been identified by October 2020 and had been signed off by Mark Cox. By March 2021, there was discussion around progressing an additional generator. Delays appear to have occurred due to the need to replace a transformer (to which I have already referred). However, the fuel dump tank performance specification was ready by May 2021 and the specification for the temporary generator was ready by the end of July 2021. These works were put out to tender and in October 2021, Mrs Berridge was instructed by the Board of Project Co to procure the fuel dump tank in advance of the order for the works due to the long lead time. Project Co has

now pre-ordered the fuel dump tank and this was expected to arrive and works commence on 16 July 2022. The minutes of a March 2022 Liaison Meeting record that the temporary generator design is being completed.

(13) As for the Stage 2 Works, the design summary report for the permanent remedial scheme was produced in November 2021. Mrs Berridge's evidence was that the Trust has agreed to Project Co entering into a pre-construction services agreement with a contractor and that she anticipated that this would be entered into very shortly with a preferred contractor. A working group has been set up with the Trust to address implementation of the Stage 2 Works. Project Co was looking to start in Q2/Q3 of 2022 and there was a high level programme. An employer's agent has been instructed.

(14) Project Co has gone through an options paper with the Trust, given that the works are being undertaken at a live hospital.

(15) Mrs Berridge confirmed in her evidence that the Trust is happy with the progress that Project Co has made in managing the defects and is "looking to Project Co to remedy the defects, to keep them updated with progress".

346. In the circumstances I consider that there is no basis for concluding (as Lendlease invites me to do) that Project Co never informed the Trust of the Defects, or that it would be appropriate to draw an adverse inference by reason of a failure to call representatives from the Trust to give evidence. Aside from the fact that there is no pleaded case as to the Trust's intentions to answer on this point, there is ample evidence on which to find (and I do find) (i) that the Trust has been kept fully and properly informed as to the existence of the Defects and the proposals for their remediation; (ii) that the Trust is in agreement that work must be undertaken to remedy the Defects and (iii) that Project Co has been progressing the plans (in conjunction with the Trust) for the remedial works with the clear intention that they are necessary and (subject to the court's determination) they will be carried out. Whilst the process has taken a lengthy period of time, I cannot find, as Mr Hickey invites me to do, that the Trust does not want the remedial works (whether Stage 1 or Stage 2) to be undertaken, or that it considers there to be no real need for those works.

347. In submitting that the court is entitled to reject the claimed remedial scheme on the basis that there is no intention to carry out that scheme, Mr Hickey invites me to

draw an analogy with the facts of *London Fire and Emergency Planning Authority v Halcrow Gilbert Associates Ltd* [2007] EWHC 2546 (TCC), in particular paragraphs [659]-[673]. In my judgment however, any such analogy would be misplaced. HHJ Toulmin QC accepted in *London Fire* that on the basis of the available evidence he could not conclude that the proposed remedial schemes would be carried out or that it would be reasonable to carry them out. However, he had no documentary evidence as to any intention to carry out the works and indeed the evidence he had seen enabled him to form the view that the Authority regarded the remedial schemes as “fatally flawed”. Furthermore he concluded that the proposed remedial works would necessitate a very substantial additional cost. The facts with which I am concerned are very different – I am certainly not in a position where I could conclude that the proposed remedial schemes will never be implemented or that the Trust and/or Project Co regards them as unnecessary or fatally flawed.

348. I accept Mr Selby’s submissions that there is ample evidence available of Project Co’s and the Trust’s intentions to carry out the Stage 1 and Stage 2 Works and further that, in circumstances where Project Co has the requisite intention to carry out the remedial works, its proposed remedial scheme is reasonable. Whilst there was some delay in identifying the appropriate remedial scheme, which initially caused me concern not least because of the increased fire risk, Mr Selby was able to address that concern by taking me carefully through the chronology in closing (a chronology which I have sought to reproduce above). I find that, contrary to Mr Hickey’s submissions, the delay is not indicative of a lack of intention to carry out the remedial works.

349. I also accept that in the particular circumstances of this case, which have involved a flat denial of all liability on the part of Lendlease until its limited concession shortly prior to the trial, Project Co’s approach to the conduct of the Stage 2 Works, as explained by Mrs Berridge, was a legitimate (and commercially prudent) approach to take. This appears to me to find support in *Dodd Properties Ltd v Canterbury City Council* [1980] 1 WLR 433, a case in which the Court of Appeal found that the claimant was entitled to the cost of remedial works as at the date of trial because it had delayed in carrying out remedial works for eight years until it knew whether or not it would recover the cost of the works from the Defendant. Megaw LJ said this at 452:

“If a balance had to be struck, surely it would be right, even in a climate of indulgence to contract-breakers or tortfeasors, that the scales should move heavily in favour of the innocent party as against the wrongdoer, in any comparison of respective disadvantages or unfairnesses? It has to be borne in mind that these were defendants who were wrongly maintaining a denial of liability and thereby leaving the plaintiffs faced with all the potentially heavy expenditure of money required for the mere purpose of establishing by litigation what we now know to have been their rights.”

350. I reject any suggestion that the decision to await the outcome of these proceedings before carrying out the Stage 2 Works precludes Project Co from recovering any damages. In closing, Mr Hickey argued that “[i]f Project Co were truly concerned about remedial works and threats to safety, it should have got on and carried out remedial works in 2018/2019”. He submits, by reference to a quotation from Engie for the installation of compartmentation in April 2019, that if there really had been a significant issue with lack of compartmentation, Project Co would have instructed Engie to proceed at that time. However, I accept Mrs Berridge’s explanation that Project Co did not proceed with the work proposed by Engie because Hoare Lea was in the process of advising on remedials at that time. There is support for this proposition to be found in the contemporaneous documents. Furthermore, there is no pleaded case to the effect that Engie should have been instructed to carry out the remedial works itself. In my judgment, this submission does not reflect the realities of what was taking place at the time, including the uncertainties around the scope of the necessary remedial works, and I reject it.
351. In so far as not already clear, I also reject Lendlease’s suggestion that there is somehow something suspicious in the absence of what Mr Hickey referred to as a “dobbing-in letter” from Project Co to the Trust formally informing the Trust of its breaches of the Project Agreement. Mr Hickey maintained in closing that the court should infer from the absence of such a letter that (i) Project Co had not informed the Trust that it was in breach of the Project Agreement because of the configuration of Plant Room 2; (ii) Project Co does not really believe that Plant Room 2 is non-compliant; and (iii) Project Co has exaggerated the risks of fire in Plant Room 2 and in fact appreciates that the Stage 2 Works are unnecessary.
352. Aside from the fact that this was not a pleaded issue, these submissions are, in my judgment, wholly unsupported by the evidence to which I have referred above and the inferences that I am invited to draw are not justified on the evidence. I accept Mrs Berridge’s evidence (supported by the contemporaneous documents) that

Project Co has “been very open with the Trust saying, ‘This is where we feel the defect is. This is the defect’”. That there is no document expressly confirming that by reason of the defects Project Co is in breach of the Project Agreement does not appear to me to take matters any further.

353. Before turning to quantum, there is one final argument raised by Lendlease with which I should deal. In its opening submissions, Lendlease contended for the first time that there was some significance in the fact that Engie had not pursued Lendlease in respect of the Plant Room 2 Defects and that Engie appears (from its letter dated 24 September 2018) to have rejected any suggestion that it was responsible for any defects (the implication being that it did not consider there to be any defects). I do not consider this point to have any real bearing on the conclusions I have reached.
354. It is, in my judgment, unsurprising that Engie was cautious about accepting any suggestion that Plant Room 2 might be defective, particularly in circumstances where it points out in its letter that it is unclear whether defects have been identified, whether Project Co accepts responsibility for any such defects and whether the existing fire engineered solution is in any event already in place. Engie’s letter is at an early stage in the investigations as to the defects and, as the party liable to remedy such defects under its maintenance contract and potentially responsible for the costs of such work, Engie would not want immediately to concede their existence. It may also be that Engie had all but used up the £5 million cap on its ability to recover costs from Lendlease provided for in the Co-operation Agreement, as was acknowledged by Mr Avey in cross examination. The fact that Engie may have been seeking to position itself to achieve the best possible contractual protection in relation to the alleged Plant Room 2 Defects tells me nothing about whether the defects in Plant Room 2 are genuine.
355. In conclusion, I consider that the cost of remedial works should fairly and properly be assessed as at the date of the trial.

Issue 10: What quantum is Project Co entitled to recover from Lendlease and/or Lendlease Europe in respect of each of the Defects?

356. It appears to be common ground that the correct measure of Project Co’s loss is the cost of reinstatement. I have already rejected Lendlease’s case that the damages awarded to Project Co should be reduced to reflect its proposed ‘slimmed down’

remedial scheme involving a water mist suppression system and/or Project Co's alleged lack of intention.

357. Accordingly, I accept Mr Selby's submission in closing that there is only 'one show in town' in respect of the appropriate reinstatement remedial scheme, namely the Hoare Lea remedial scheme for the Stage 1 and Stage 2 Works considered and approved by Project Co's technical experts.
358. In closing, however, Mr Hickey contended, first, that the court has insufficient evidence of the remedial scheme that is proposed or of the costs of that scheme. He described Project Co's case as speculative and he suggested that the court has been presented with nothing more than a "nebulous mess". Second, Mr Hickey contended that where Engie can be compelled to carry out the works at their own cost (with subsequent recovery from Lendlease subject to the cap of £5 million to which I have already referred), the limit of the sums due from Lendlease must be "the amount it would cost Engie to do [the remedial work]", rather than the cost of a third party contractor. I understood this to be a general point as to mitigation of loss pursuant to clauses 67 of the Project Agreement and 51 of the D&B Contract, which are in exactly the same terms and provide that: "Each Party shall at all times take all reasonable steps to minimise and mitigate any loss for which the relevant Party is entitled to bring a claim against the other Party pursuant to this Contract".
359. Mr Hickey further developed his second submission by making a different, but related, point that the court has no evidence as to the cost of Engie carrying out the remedial works beyond a quotation provided by Engie in an email dated 5 April 2019. This quotation refers to a scheme "to form partial sub-compartments around the HV and LV spaces within Plantroom 2" and attaches an "outline" costs document. It is said to be based upon "the scope of works produced by Hughes Associates" and it estimates the total sub-compartment fire stopping works at £119,600. In addition, it estimates "associated ventilation and cooling works costs and additional lighting at £31,800. The overall programme for completing the combined package of sub-compartment and M&E works is estimated by Engie at 12 weeks. The total costs estimate, including add ons, is identified as £193,473. Mr Hickey submits that the effect of this evidence is to set the assessments carried out by the quantum experts "at nought". The true figure for compartmentation and suppression, he says, is therefore c. £194,000 – the relevant rates being 2019 rates.

360. I cannot accept any of these submissions. Mr Hickey's first point is inconsistent with Mr Somerset's evidence on behalf of Lendlease that "a huge amount [has been] spent on design fees" over a number of years, that Mr Finn's schedule contains "quite some considerable detail" and that the design work done to date has taken the remedial scheme "beyond concept stage". In any event, Mr Finn's assessment includes a risk allowance designed to address uncertainties. I find that by virtue of the stage of the design and the risks incorporated by Mr Finn into his assessments, the court is plainly in a position to carry out a reasonable assessment of Project Co's losses and I reject Mr Hickey's submissions to the contrary.
361. On the question of failure to mitigate, raised for the very first time in closing. Lendlease has no pleaded case that Engie should have been instructed to carry out the remedial works itself and no pleaded case that Project Co has failed to mitigate its loss (notwithstanding that, as Mr Selby informed me, the quotation from Engie on which Mr Hickey relies has been in disclosure from the outset and could have been relied upon previously by Lendlease). Absent a pleaded case, the court has no evidence as to how much it might cost Engie to carry out the works. This seems to me to be an end to the point. Mr Selby also submits that clause 10.4 of the Estates Maintenance Contract expressly provides that Project Co is permitted to instruct a third party contractor "in the alternative to instructing the Estates Maintenance Contractor [i.e. Engie]". However, in my judgment (as is plain from Appendix 1 to that agreement), the reference to "the Contractor" in that clause is to Lendlease (and not an independent third party contractor).
362. As for Engie's quotation, in my judgment it does not in fact establish that Lendlease is liable for no more than the sum identified by Engie. This is because (i) it is clear from the chronological documents leading up to this quotation (to which Mr Selby took me in closing) that the scope of work for which Engie was quoting was limited: the drawing attached to the quotation is concerned only with identifying the "partial sub compartmentation works" referred to in the email and the proposed M&E works are said to require an initial instruction to complete design works for tendering purposes; accordingly (ii) the works proposed by Engie bear no relation whatever to the full package of works which Project Co's experts consider reasonable by way of remedial works at Stage 2.
363. Further and in any event, however, if one focusses only on the fire rated construction works package by way of a comparable, Mr Finn's evidence (which I accept) is that

the fire stopping works costed by Engie are 50% over the value assessed by the quantum experts for similar works and Engie has in fact priced risk in the same way as Mr Finn (using the same methodology and applying it to the same totals). In other words, far from establishing a maximum figure for Project Co's claim against Lendlease, the Engie quotation evidences the fact that Project Co's claim in these proceedings is reasonable.

364. Turning then to the quantum of the claim, the court has what Mr Finn referred to as a built up cost plan which involves a series of works packages which have been priced up by the quantum experts. To these prices, various add-ons have been applied. There are substantial areas of agreement between the experts on the base costs of works packages, but also areas of disagreement, including on the methodology for the calculation of various add-ons. In some cases open offers have helpfully been made by Project Co as to the base costs of individual items (as reflected in a letter dated 25 April 2022 together with attachments). Lendlease did not, however, accept these offers, meaning that, with a few exceptions, all areas of disagreement between the experts remained in issue at trial.
365. An issue that featured at trial was the extent of the overlap between the various Defects in terms of allocation of cost of remedial works – with the same elements of cost occurring in more than one Defect, as was clear from the Amended Scott Schedule, Appendix 4.17.1 of Mr Finn's report and Appendix 4 of Project Co's opening submissions. This had the potential to cause difficulties in the event that Project Co had succeeded on some but not all of the Defects, particularly in circumstances where the allocation approach had not been agreed between Mr Finn and Mr Somerset but had been arrived at by Mr Finn and included in his first report following discussions with Project Co's technical experts. It would have been helpful if the quantum experts could have continued their discussions in the lead up to the trial with a view to addressing this point.
366. However, in the event, I have found that all the Defects are made out and, in the circumstances, I need not try to unravel the allocations or the rationale that lay behind them. Mr Finn was cross examined at some length as to the quantum overlap within Project Co's case and the way in which the quantum case had been pleaded. I am afraid that I did not find this cross examination particularly helpful and certainly do not consider that it undermined Mr Finn's credibility or affected my overall conclusions on quantum.

367. Where there are differences between the approach taken by the quantum experts, I prefer the opinions of Mr Finn, essentially for the following reasons:

- (1) Mr Finn's reports were detailed and thorough. The substance and detail of those reports was barely challenged in cross examination. In so far as it was challenged, I consider that Mr Finn gave credible and careful explanations. There was certainly no basis for the submission made by Mr Hickey in opening to the effect that Mr Finn's valuations were partial and inconsistent with his obligations under CPR 35. In any event, this case was not seriously put to Mr Finn in cross examination. In so far as attempts were made to show that Mr Finn had not adequately engaged with Mr Somerset, those attempts foundered in the face of Mr Finn's clear evidence to the contrary.
- (2) By contrast, Mr Somerset had plainly not carried out a similarly rigorous analysis. He frequently described his own figures (both in his report and in his oral evidence) as "arbitrary assessments"; very often he had provided no supporting or corroborative material and had not set out his workings or, in some cases, the assumptions he had made. By way of example, when being questioned about a reasonable sum for cabling, Mr Somerset's evidence was as follows:

Q. Are you able to identify any other sources which might corroborate your rates or your measure?

A. No, apart from we made extensive references to Spon's.

Q. What, for the purposes of your £250 a metre?

A. Yes, I would have had a look through Spon's.

Q. But you have not said that again, have you?

A. No, I have not.

Q. And you have not identified the relevant page or item reference in Spon's?

A. No.

Q. So, it was a "take it from me" it's based on a Spon's rate, is it?

A. It's more or less – it's a Spon's rate with adjustments made for possibly the difficulty factor as well.

Q. Possibly?

A. Yes, I can't remember exactly what I did there but I made an assessment.

Q. Well, isn't this a classic where you should have shown your workings out there?

A. Yes.

- (3) I accept Mr Selby's submission that many of Mr Somerset's figures relied on overly simplistic assessments, or research on the internet (reference to which had often not been made in his report) and that, on occasions, he appeared to have no explanation for the decisions he had made. He had departed from the New Rules of Measurement without any explanation as to why he had done so. Where he had relied on tenders he had taken one in isolation without considering the other relevant evidence. During his evidence he was forced to retract an assertion in his supplemental report that a tendered price and an assessment of that price by Mr Finn were "artificially inflated", an unwarranted and inappropriate criticism.
- (4) The contrast between Mr Finn's careful approach and Mr Somerset's approach was illustrated by various exchanges during cross examination which established that Mr Somerset had frequently made personal or arbitrary assessments as to price, rather than taking a tendered figure and applying cross checks to determine that it was reasonable (as Mr Finn had done).

368. Taking, by way of example, a couple of the items of disagreement:

- (1) Within the Stage 1 Works, there is a significant disagreement between the quantum experts over the cost of the evacuation of fuel from the generator space, essentially because Mr Finn has obtained a tender from Illingworth & Gregory based on a detailed performance specification, which he has cross checked, whereas Mr Somerset obtained his figures from the internet (including a fuel tank at a much lower cost), albeit that he did not attach any of the relevant research to his report. Mr Somerset confirmed in cross examination that he had not sought to obtain his own quote and that he had ignored the tendered sum from Illingworth & Gregory and had not considered their tender clarification provided on 29 April 2022. Having regard to the tender clarification, Mr Somerset accepted that his overall assessment of fuel dump tank works of circa £72,000 looked "pretty light" subject to a careful review.
- (2) Within works package 'Ventilation Works – Option 1' (this option being identified because there was little difference between the two options

considered by the experts), Item 193 is the biggest single item and relates to works to re-route ductwork in the location of a Motor Control Panel (MCE-B1-006) which receives a single power supply but supplies many individual items of mechanical plant located opposite the switch rooms within Plant Room 2. These works necessitate the relocation of the cable tray. Mr Finn had regard to a schematic attached to the Hoare Lea specification which makes clear that the “tray has to be removed and relocated” (as Mr Finn explained in re-examination), and a circuit chart appended to his report in costing the works at £64,599.54. He included “a detailed Excel working” at Appendix 3.4 identifying his measurement (which Mr Somerset accepted was a “detailed measurement of all the relevant cables”). His rate build up is based upon SPON’s with relevant adjustments, as explained in his report. By contrast, Mr Somerset says in his report: “My assessment is an arbitrary £10,000 on the basis that the works can be carried out from the other side of the wall and does not necessitate the need for disconnecting/connecting cables”. In cross examination it transpired that this understanding was based purely on what Mr Somerset had been told by Lendlease but had not recorded in his report and that he had not been able to check the point on site. Mr Somerset provided no figure to compare with Mr Finn’s assessment in the event that he was wrong as to the location from which the works could be carried out.

- (3) Within works package ‘Segregation of primary and secondary LV cabling’, the difference between the experts excluding prelims and add-ons is approximately £155,000. The main area of disagreement concerns the appropriate uplift for labour rate. The labour involves cable removal, cable pulling and the provision of containment. Mr Finn has adopted SPON’s rates for M&E 2021 and applied a 100% uplift on the basis that the SPON’s rates make various inapplicable assumptions, including that the work is new work in a normal working environment. This is consistent with the evidence that the works will involve working around multiple congested services and associated supports in a live hospital environment, as (i) Mr McDonald explained in his Appendix 7, on which he was not cross examined, and (ii) Mr Kavanagh explained in his report. I accept their evidence on this. Mr Finn has also carried out analysis to test his 100% uplift and he has obtained

three quotes from specialist contractors which appear to support his figures. Mr Somerset has relied simply upon rates provided by FB Taylor Cable Contractors together with an extra over uplift of 25% which he accepts in his report is “an arbitrary assessment” and acknowledged in cross examination he had “just come up with”. Mr Somerset also deducted the salvage costs – i.e. the scrap value of copper. However, Mr Somerset has not addressed the quotes obtained by Mr Finn in his report and it is clear that the FB Taylor quote (obtained by Lendlease) is merely a budget quotation subject to a site visit. Under cross examination, Mr Somerset accepted that, if using SPON’s rates, an uplift would be appropriate in the Plant Room to take account of the additional difficulty involved by reason of, amongst other things, working at height and the congestion of the services and he also appeared to accept that his deduction for scrap value “would mean that the cable pullers are paying £9,000 to do the work”.

369. These three examples neatly illustrate the concerns I have expressed around Mr Somerset’s evidence and why, for all the reasons I have given, I prefer the evidence of Mr Finn over that of Mr Somerset.
370. In closing, Mr Selby took me to an excel spreadsheet identifying Project Co’s case as to the base costs of the individual works packages together with add ons. At Appendix 2 to his closing submissions, Mr Selby provided me with a Quantum table identifying the items that are agreed, the items that are not agreed (a few of which I have dealt with above) and the open offers made by Project Co.
371. Given my findings, it appears to me that the easiest way of dealing with base costs for present purposes is to indicate that Project Co’s damages should include (i) for items which are agreed, the cost agreed by both experts; (ii) for items which are not agreed, but in respect of which an open offer has been made by Project Co, the figure identified in the open offer; (iii) for items which are not agreed, the cost identified by Mr Finn, on the basis that I prefer his evidence. There should be a deduction for the two fire dampers that Project Co now accepts are no longer required.
372. Turning to disputed add-ons, first in relation to Main Contractor’s Preliminaries (permanent works):
- (1) the damages should include the figures identified in the open offer.
 - (2) Furthermore, I resolve the disagreements on the ‘pre-contract planner’ and the ‘waste allowance’ in Project Co’s favour. As to the former, Mr Somerset

originally agreed with Mr Finn as to the cost and does not anywhere explain why he now seeks to go behind that agreement. As to the latter, Mr Somerset accepted in cross examination that Mr Finn had carried out a “fair exercise” by reference to prices from three salvaging companies whereas he had only considered the FB Taylor quotation which was a budget quotation based on one visit.

(3) Although initially in agreement, the experts’ reports evidence a disagreement on the calculation of preliminaries. The central difference is that Mr Finn has based his assessment on an 8 week lead-in period with a 45 week construction duration whereas Mr Somerset (having originally agreed with Mr Finn in the first joint statement) has now based his assessment on an 8 week lead in period with a 38 week construction duration. Mr Finn was not challenged in cross examination about his assessment. Mr Somerset accepted in cross examination that he had revised his estimate without the input of a programmer and that in doing so he had made substantial changes which assumed activities would be carried out concurrently. He accepted that this was not within his expertise. In the circumstances I can see no basis for deviating from the agreement reached between the experts in the joint statement.

373. Second, in relation to Main Contractor’s Preliminaries (Priority Works), the difference between the experts is largely accounted for by reference to the fact that Mr Finn considers the preliminaries will take 8 weeks, whereas Mr Somerset considers that they will take 6 weeks. Mr Finn was not cross examined on this but Mr Somerset was. He accepted that he had made an assessment but had given no explanation in his report as to how he had arrived at that assessment, saying it was “just based--it’s based on experience of—it can’t be precise as I said before”. Again I prefer Mr Finn’s evidence.

374. Third, in relation to ‘Risk’ and ‘fees’, the differences between the experts essentially arise by reason of the same difference in methodology. As to risk, the experts agree that the relevant percentage to be applied in respect of design development risks is 4% and in respect of construction risks is 10%. However, Mr Finn applies the 10% to the Base Cost Estimate for the works (in accordance with the guidance in the New Rules of Measurement (“**NRM1**”)) such that it is applied to the Main Contractor’s preliminaries and Main Contractor’s Overheads and Profit as well as other project

and design fees, whereas Mr Somerset applies the 10% to the Building Works Estimate. As to fees, Mr Finn has calculated Consultant Fees in accordance with NRM1 and as a percentage of the Works Cost Estimate, whereas Mr Somerset has calculated Consultant Fees as a percentage of the Building Works Estimate.

375. I agree with Project Co that there is no valid basis for departing from the standard approach contained in the NRM1 and none has been suggested. Mr Somerset did not even refer to the NRM1 in addressing this issue and certainly did not explain, as the NRM1 suggests he should have done, why he was departing from the recommended approach. He was unable to point to any guidance to support the approach he had adopted. Furthermore under cross examination in relation to risk, Mr Somerset was unable to explain why he had applied his design development percentage to the works' costs but taken a different approach for his construction risk percentage, applying it to the Building Works Estimate ("No, I can't explain that"). Again, I prefer the approach of Mr Finn.
376. Fourth in respect of Employer Other Risks, these are assessed at 2% by Mr Finn and at 0% by Mr Somerset. As with the other risk items, Mr Finn calculates Employer Other Risks as a percentage of the Base Cost Estimate on the basis that the proposed form of contract and its allocation of risk is not yet known, there are continuing risks associated with the Covid 19 pandemic and there are also macroeconomic factors such as material shortages. In my judgment this is a reasonable approach to take. Mr Somerset does not apply any percentage for Employer Other Risks on the basis that he considers it unsupported and unjustified, albeit he does not explain why in his report. Under cross examination he accepted that Employer Other Risks is a recognised risk in the NRM1.
377. Before moving on, I note that in his closing submissions, Mr Hickey contended that Mr Finn appeared to be "maintaining his figures at a high level quite unnecessarily to assist his client" and that he has "added in items of risk that are unrealistic". I reject these submissions which, in my judgment are unsustainable in light of the evidence.
378. Finally, on inflation, there is a difference between the experts because Mr Finn has figures for tender inflation to Q3 2022 and for construction inflation to Q2 2023, whereas Mr Somerset has not calculated inflation at all, explaining that he had not been instructed to assess costs beyond Q1 2022. I accept that an allowance needs to be made for inflation and absent any figures from Lendlease, I accept those advanced

- by Project Co, as updated at the trial. I reject Mr Hickey’s submission that this represents a “windfall” for Project Co owing to the fact that it has not yet decided upon, or carried out, the remedial scheme. I have dealt with these submissions above.
379. In so far as Project Co claims investigation costs, Project Co’s damages should again include the figure identified in the open offer which represents agreement with Mr Somerset’s analysis.
380. For the sake of completeness I reject the suggestion made by Lendlease that the remedial works amount to betterment; a suggestion which is unsupported by the evidence.
381. Upon the provision of this judgment in draft to the parties, they were able to agree a spreadsheet identifying the final quantum assessment. A copy is attached for ease of reference.

INDEMNITY CLAIM

382. In addition to its claim for damages, Project Co pursues a claim for an indemnity by way of declaration, pointing to its entitlement to an indemnity in clause 5.2 of the D&B Contract:

“The Contractor shall ensure that none of the following occur and shall indemnify Project Co against all claims, proceedings, loss, damage, costs and expenses (including legal costs) suffered or incurred in relation to any of the following save to the extent caused or contributed to by any breach by Project Co of this Contract or the negligence of Project Co, its employees, agents or sub-contractors agents or subcontractors (excluding the Contractor, the Estates Maintenance Contractor, the MES Provider and its sub-contractors).

5.2.1 Any breach, non-observance or non-performance by the Contractor of those of its obligations referred to in clause 5.1.

5.2.2 Any act or omission of the Contractor, a subcontractor of the Contractor, or their respective employees, servants or agents which causes, contributes or otherwise gives rise to any breach by Project Co of any of its

obligations pursuant to, or liability under, the Project Documents or otherwise gives rise to any other liability on the part of Project Co to the Trust, the Funders or any Project Participant or pursuant to any Law or Consent[...]”

383. Clause 34.3 of the D&B Contract provides that:

“34.3 Without prejudice to Project Co’s other rights, the Contractor shall indemnify Project Co in full in respect of any deduction from or reduction in the Service Payments received by Project Co under the Project Agreement to the extent that same arises from:

34.3.1 a defect which is due to the failure of the Contractor to comply with its obligations under this Contract present in the Building Contractor’s Works at any time up to the expiry of the Limitation Period; and/or

34.3.2 the carrying out of works to rectify such a defect in accordance with clause 34.1, or the Contractor attending to Snagging Works pursuant to clause 33.10, or the Contractor carrying out additional work or remedial work as referred to in clause 14 [...].”

The Law

384. The court has power to grant declaratory relief in a private action by reason of section 19 of the Senior Courts Act 1981.

385. That power appears to be unfettered, but the grant of a declaration remains a discretionary remedy (see *BNP Paribas SA v Trattamento Rifiuti Metropolitani SPA* [2020] EWHC 2436, per Cockerill J at [59] to [60]). The issue is whether the circumstances of the case are such as to make it appropriate for the court, in the exercise of its discretion, to grant a declaration. In particular, is there a real dispute between the parties such as to make it appropriate to grant a declaration, taking into account, as stated by Neuberger J in *Financial Services Authority v Rourke* [2002] CP Rep 14, “justice to the claimant, justice to the defendant, whether the declaration would serve a useful purpose and whether there are any special reasons why or why not the court should grant the declaration” (see also *Pavledes v Hadjisavva* [2013] EWHC 124 (Ch) per David Richards J, as he then was, at [40]).

386. In *Rolls-Royce plc v Unite the Union* [2009] EWCA Civ 387 Aikens LJ set out the following principles which will be considered by the court before that discretion is exercised (at [120]):

- “(1) The power of the court to grant declaratory relief is discretionary.*
- (2) There must, in general, be a real and present dispute between the parties before the court as to the existence or extent of a legal right between them. However, the claimant does not need to have a present cause of action against the defendant.*
- (3) Each party must, in general, be affected by the court’s determination of the issues concerning the legal right in question.*
- (4) The fact that the claimant is not a party to the relevant contract in respect of which a declaration is sought is not fatal to an application for a declaration, provided that it is directly affected by the issue.*
- (5) The court will be prepared to give declaratory relief in respect of a friendly action or where there is an academic question if all parties so wish, even on private law issues. This may particularly be so if it is a test case, or it may affect a significant number of other cases, and it is in the public interest to decide the issue concerned.*
- (6) However, the court must be satisfied that all sides of the argument will be fully and properly put. It must therefore ensure that all those affected are either before it or will have their arguments put before the court.*
- (7) In all cases, assuming that the other tests are satisfied, the court must ask: is this the most effective way of resolving the issues raised? In answering that question it must consider the other options of resolving this issue.”*

Discussion

387. The claim for an indemnity is set out in paragraphs 59-61 of the Amended Particulars of Claim. Essentially, the indemnity is sought as an alternative to the losses claimed by reason of the Stage 1 and Stage 2 Works (an outcome which is plainly unnecessary given my determination) and in respect of any damages payable by Project Co to the Trust, or any deduction from, or reduction in, Service Payments received by Project Co under the Project Agreement.

388. While a declaration may be granted in respect of a right that might come into existence in the future upon the happening of an event, nevertheless, in the exercise

of my discretion I do not consider that a declaration is in the interests of justice in this case or that it would serve a useful purpose.

389. I have awarded substantial damages to Project Co for the Defects that it has identified. By its indemnity claim, Project Co also seeks a blank cheque in relation to any future claim which may be issued against it by the Trust. However, there is currently no evidence that such a claim will be issued or is even being contemplated. Equally there is no evidence of deductions in Service Payments. On the contrary, the evidence from Project Co has been that the Trust is supportive of this action as a means of resolving the issues that have arisen at the Hospital. In the circumstances, I consider that the benefit and practical utility of granting a declaration is extremely limited. By contrast, the making of a declaration at this stage would leave Lendlease with an unquantified and uncertain liability to Project Co.
390. In my judgment it would be more proportionate and just for a judge in any future claim to determine issues relating to the scope and effect of the D&B Contract indemnity clauses (including the extent to which any claim to an indemnity may be statute barred, as Mr Hickey contends) as and when they arise (if they arise) in the context of future action by the Trust.
391. I am grateful to the parties for the additional research they undertook after the trial into the question of the entitlement to declarations.
392. For the reasons given I reject Project Co's claim for an indemnity and decline to make the declaration sought.

THE PARENT COMPANY GUARANTEE CLAIM

393. It is common ground that if Project Co proves its case against Lendlease, the Parent Company will also be liable to Project Co under the terms of the Parent Company Guarantee. Project Co has proved its case and accordingly the Parent Company is liable.

Item No.		Position following Reports [A2928]		Disputed Item			Explanation
		Finn Assessment	Somerset Assessment				
	PERMANENT WORKS						
	Separation of primary and secondary supply (HV)	£52,644.72	£52,644.72	n/a		£52,644.72	Agreed
	Fire rated construction	£55,122.13	£53,574.69	£54,299.27		£54,299.27	As per Open Offer
252	Fire curtain			£3,104.97		Included above	
	Remedial works in generator space	£47,460.92	£47,460.92	n/a		£47,460.92	As per Open Offer
	Ventilation works – Option 1	£287,321.10	£211,229.44	£281,995.92		£281,995.92	As per Open Offer
	Deduction for two dampers not required	(£4,000.00)					These are deducted as per paragraph 371 of the Judgment. As the figure already includes add-ons, they have been removed on 194 below.
40-43	Ancillary Allowances			£9,602.37		Included in above	

Item No.		Position following Reports [A2928]		Disputed Item			Explanation
		Finn Assessment	Somerset Assessment				
101, 109, 115, 125, 127	Fire-rated insulation			£2,509.21		Included in above	
175	Testing and commissioning			n/a		Included in above	
193	MCE-B1-006			n/a		Included in above	
202-205	Terminate and re-commission – Sauter team			£17,641.22		Included in above	
	Fire Suppression	£498,656.79	£381,005.43	£439,831.11		£439,831.11	As per Open Offer
14-16	Design, installation and sub-contractor preliminaries etc.			£320,652.60		Included in above	
17	Moving bearers			£2,592.13		Included in above	
18	Drop-down curtain etc.			£12,250.00		Included in above	
23-27	Connection of existing sprinkler to suppression system			£928.38		Included in above	
37-38b	Gent managed protocol			£89,014.95		Included in above	

Item No.		Position following Reports [A2928]		Disputed Item			Explanation
		Finn Assessment	Somerset Assessment				
40-41	Trend managed protocol			£5,000.00		Included in above	
	Segregation of primary and secondary LV cabling	£531,423.08	£341,914.03	£497,301.67		£497,301.67	As per Open Offer
62-171	Removal and pull back of cables			n/a		Included in above	
182-284	Install new cable and tray (excluding Unistrut supports, see next item below)			n/a		Included in above	
187, 188, 193, 198, 211, 218	Mild steel Unistrut supports			£26,402.35		Included in above	
395	Out of hours work in corridor – supervision			£55,441.00		Included in above	
396-400	Out of hours work in corridor – making good etc.			£9,494.30		Included in above	
	PRIORITY WORKS						

Item No.		Position following Reports [A2928]		Disputed Item			Explanation
		Finn Assessment	Somerset Assessment				
	Evacuation of Fuel from Generator Space	£157,435.12	£72,827.52	n/a		£157,435.12	As per Finn
	Temporary Generator	£455,412.36	£203,416.33	£453,505.36		£453,505.36	As per Open Offer
	OTHER WORKS						
	Removal and renewal of transformers	£40,358.45	£17,201.77	£21,502.20		£21,502.20	As per Open Offer
	Removal and renewal of generators	£64,438.72	£8,535.83	£13,482.28		£13,482.28	As per Open Offer
	TOTAL BUILDING WORKS ESTIMATE (EXCL PRELIMS)						
	Temporary Works total					<u>£610,940.48</u>	
	Main Works Total					<u>£1,408,518.09</u>	
	PRELIMINARIES & ON COSTS						
	Main Contractor's Preliminaries (Permanent Works)	£740,859.08	£516,192.85	£696,136.16		£696,136.16	As per Open offer
1.1.6	Pre-Contract Planner			n/a			
1.11.1	Waste allowance			n/a			

Item No.		Position following Reports [A2928]		Disputed Item			Explanation
		Finn Assessment	Somerset Assessment				
1.1.16	Commissioning engineer			£18,000.00		Included in above	
1.7.1	Plant and Small tools			£29,288.52		Included in above	
1.12.2	Cluster charges			£22,500.00		Included in above	
	All other differences relate to contract duration						
	Main Contractor's Preliminaries (Priority Works)	£103,425.63	£52,265.68			£103,425.63	As per Finn
	TOTAL BUILDING WORKS ESTIMATE WITH PRELIMS					<u>£2,819,020.36</u>	
	ADD Main Contractor's OH&P	12%	12%		12%	£338,282.44	As per Finn
	TOTAL WORKS COST ESTIMATE					<u>£3,157,302.80</u>	
	Fees						
	Contract administrator	2%	2%		2%	£63,146.06	% on Total Works Cost Estimate as per NRM

Item No.		Position following Reports [A2928]		Disputed Item			
		Finn Assessment	Somerset Assessment				
							and Para 374 of the Judgment
	Architect (including disbursements)	3.6%	3.6%		3.6%	£113,662.90	% on Total Works Cost Estimate as per NRM and Para 374 of the Judgment
	Building services engineer	5%	5%		5%	£157,865.14	% on Total Works Cost Estimate as per NRM and Para 374 of the Judgment
	Structural engineer	1%	1%		1%	£31,573.03	% on Total Works Cost Estimate as per NRM and Para 374 of the Judgment
	Fire engineer	1%	1%		1%	£31,573.03	% on Total Works Cost Estimate as per NRM and Para 374 of the Judgment
	CDM co-ordinator	1%	1%		1%	£31,573.03	% on Total Works Cost Estimate as per NRM and Para 374 of the Judgment
	Trust Project Manager	£101,250.00	£85,500.00			£101,250.00	As per Finn
	Facilities management Project Manager	£40,000.00	£20,000.00	£30,000.00		£30,000.00	As per Open Offer

Item No.		Position following Reports [A2928]		Disputed Item			Explanation
		Finn Assessment	Somerset Assessment				
	Trust Public relations and liaison	£18,000.00	£15,200.00			£18,000.00	As per Finn
	Hygiene control, monitoring and sampling	£10,000.00	£10,000.00			£10,000.00	As per Finn
	Quality inspection team	£13,500.00	£11,400.00			£13,500.00	As per Finn
	Main contractor's design fees	4%	4%		4%	£80,778.34	On Building Works Estimate
	Main contractor's OH&P on design fees	3%	3%		3%	£2,423.35	On Main Contractor's design fees
	Allowance for land for locating temporary site establishment	£30,000.00	£30,000.00			£30,000.00	Agreed
	TOTAL: BASE COST ESTIMATE					£3,872,647.68	
	Risk						
	Design Development Risk	4%	4%		4%	£154,905.91	On Base Cost Estimate as per para 374 of the Judgment

Item No.		Position following Reports [A2928]		Disputed Item			Explanation
		Finn Assessment	Somerset Assessment				
	Construction Risks (identified)	10%	10%		10%	£387,264.77	On Base Cost Estimate as per para 374 of the Judgment
	Employer other risks	2%	0%		2%	£77,452.95	On Base Cost Estimate as per para 374 of the Judgment and para 376 of the Judgment
	Inflation to Q1 2022	£37,722.02	£30,491.08			£37,722.02	Amended
	Inflation beyond Q1 2022		Not instructed	Updated to £273,398.55: see paragraph 367 and Appx 5 of Claimant's Opening		£273,398.55	Amended
	Investigation and design costs	£323,385.26	£235,251.61	£249,142.51		£249,142.51	Open offer
	Less Dampers					-£4,000.00	As above
	TOTAL, including inflation					<u>£5,048,534.39</u>	

Inflation estimate

Tender inflation estimate

Cost limit, excluding inflation

0.00 BCIS All-in TPI #101

The estimate base date is March 2022 (1Q 2022)

Base date: 1985 mean = 100/Updated: 11-Mar-2022 #101

Assumed tender return date of the end of August 2022 (3Q 2022)

Tender Price indices (using BCIS All-in TPI):

1Q 2022 349
 3Q 2022 358
 Percentage applicable for tender inflation is:

$$= \frac{(358 - 349)}{349} \times 100 = 2.58\%$$

Date	Index	Equivalent sample	On year	Percentage change on Quarter	On month
2Q 2020	335	Provisional	0.0%	0.0%	
3Q 2020	330	Provisional	-1.5%	-1.5%	
4Q 2020	328	Provisional	-1.5%	-0.6%	
1Q 2021	328	Provisional	-2.1%	0.0%	
2Q 2021	331	Provisional	-1.2%	0.9%	
3Q 2021	339	Provisional	2.7%	2.4%	
4Q 2021	344	Provisional	4.9%	1.5%	
1Q 2022	349	Provisional	6.4%	1.5%	
2Q 2022	355	Forecast	7.3%	1.7%	
3Q 2022	358	Forecast	5.6%	0.8%	
4Q 2022	359	Forecast	4.4%	0.3%	
1Q 2023	365	Forecast	4.6%	1.7%	
2Q 2023	370	Forecast	4.2%	1.4%	
3Q 2023	370	Forecast	3.4%	0.0%	
4Q 2023	373	Forecast	3.9%	0.8%	
1Q 2024	380	Forecast	4.1%	1.9%	
2Q 2024	385	Forecast	4.1%	1.3%	
3Q 2024	385	Forecast	4.1%	0.0%	

Construction inflation estimate

Cost limit, excluding inflation

0.00

Estimated cost of tender inflation

-

Assumed tender return date: end of August 2022 (3Q 2022)

Assumed construction phase commencement: October 2022

Assumed construction phase completion: October 2023

Assumed construction period: 53 weeks

Mid-point construction phase occurs at end of circa. week 27 (rounded)

Assumed programme from tender return date:

Tender evaluation, reporting, post-tender negotiations, contract award	4 weeks	4Q 2024	388	Forecast	4.0%	0.8%
Notification period before mobilisation	2 weeks	1Q 2025	395	Forecast	3.9%	1.8%
Mid-point construction phase occurs after	27 weeks	2Q 2025	400	Forecast	3.9%	1.3%
	33 weeks	3Q 2025	400	Forecast	3.9%	0.0%
Tender price indices (using BCIS All-in TPI):		4Q 2025	403	Forecast	3.9%	0.8%
3Q 2022	358	1Q 2026	410	Forecast	3.8%	1.7%
2Q 2023	370	2Q 2026	415	Forecast	3.8%	1.2%
		3Q 2026	415	Forecast	3.8%	0.0%
Percentage applicable for tender inflation is:		4Q 2026	418	Forecast	3.7%	0.7%
= $\frac{(370-358)}{358}$ X 100 =	3.35%					
			-			